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ABSTRACT

The purpose of this study was to investigate the differences between exploratory children and cautious children as they functioned in open classrooms over a period of time and to document some general aspects of child behavior in open educational settings. Sixty children were observed through the course of the school year in their first grade open classrooms. Data analysis was focused on exploratory behavior in the classroom; patterns of mastery and learning; self-directed autonomous behavior, and relationships between teachers and peers. In general, it was found that differences between exploratory and cautious children were not so extensive as might be expected, and that not all predictions were borne out. There was no clear evidence that exploratory children were obviously more effective in open settings or that cautious children do not use the opportunities of the open classroom for learning and interaction. There were some systematic differences in functioning between exploratory and cautious children, however, and some patterns that characterized particularly the girls or the boys within the exploratory or cautious groups. The document includes a number of tables and detailed appendices. (MS)

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Final Report

Differential Use of the Open Classroom:
A Study of Exploratory and Cautious Children

National Institute of Education # NE-G-00-3-0018

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Philadelphia, Pennsylvania

1976

PS009332

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INTRODUCTION

Alternative forms of education have existed in this country for some time. In recent years, however, a variety of innovative programs have spread widely across the nation, both in individual school systems and in federally sponsored programs. By now we have accumulated some general data on program effects but we have little documentation of child behavior in alternative settings, and little knowledge of the differential reactions of children to non-traditional environments.

The research described in this report was focused on behavior in open classrooms, a major alternative to traditional settings. The study had two objectives. The primary purpose was to study the interaction between children's response styles and their sustained behavior in open settings. More specifically, the research was designed to investigate differences between exploratory and cautious children as they functioned in open classrooms over a period of time. A second purpose was to document some general aspects of child behavior in open educational settings. The project was seen as relevant to current issues in both psychology and education. It was intended to clarify and evaluate child behavior in open settings, with the aim of facilitating helpful teacher behavior and the planning of optimal experiences for different children within such settings. It was also intended to contribute to the study of curiosity and exploratory behavior in children. Such motivation and behavior is considered an important component of development and has become an area of increasing interest and study among psychologists.

In this introductory section, we will consider briefly the nature of open classrooms, the concept of curiosity and exploratory behavior, the areas of child study addressed in the research, and the research hypotheses concerning possible differences in the classroom functioning of exploratory and cautious children.

Open Classrooms

No single definition or description encompasses all open classrooms. However, in the literature on what has been variously described as open education, modern orientation, British Infant School approach, integrated day, and so forth, certain basic ideas are stressed. Proponents of this general approach share certain goals about learning and development, productive motivation, and the kind of environment that will facilitate such goals (Barth, 1972; Brown and Precious, 1968; Engstrom, 1970; Featherstone, 1971; Minuchin et al, 1969; Plowden Report, 1967; Rathbone, 1972; Shapiro and Biber, 1972; Weber, 1971). They generally establish classroom environments, therefore, with similar features: space and time are flexibly arranged; multiple materials allow for a variety of activities and experience; the teacher functions in an individual relationship with children and is available as resource and guide; the peer group is seen as an important context for learning activities; and the learner is in a position to make choices, explore materials, use resources independently, and interact freely with other children and teaching adults. It is hoped and theoretically expected that such environments will mobilize the child's curiosity, encourage self-directed exploration and learning, promote productive relationships, and enhance the child's self-confidence as a learner and self-appreciation as a person.

In classrooms with wide leeway for self-directed behavior, the question arises, of course, whether some children function more effectively than others, using the opportunities and materials in a more productive way. Early studies in open settings have begun to draw attention to patterns of teacher behavior, possible effects on children, issues of optimal structure and so forth (Corlis and Weiss, 1973; Gump, 1975; Resnick, 1972; Travis, 1974), but there is still not much systematic information about the functioning of different kinds of children. The study of exploratory and cautious children seems particularly relevant for open classroom research, since much is left to the initiative of the child in such settings. Theoretically, it seemed possible that differences in exploratory response style might affect the child's tendency to select and explore materials, to direct his or her own activities, to make contact and seek help when needed, and so forth.

Curiosity and Exploratory Behavior

Curiosity and the manifestation of exploratory behavior are considered complex phenomena. Definitions stress different forms of curiosity, and it seems evident from research that different situations may differentially arouse curiosity in the same individual. At the same time, research suggests that individuals differ from each other in level of curiosity (as a "trait") and that there is some consistency in the expression of curiosity from one situation to another (Maw and Maw, in press).

In this study, theory and previous research have determined the guiding definition of curious and exploratory behavior and the procedures for selecting and evaluating subjects. Definitions of curiosity often note a distinction between specific curiosity and diversive curiosity (Berlyne, 1960; Day, 1971; Maw and Maw, in press). Specific curiosity is directed toward exploring a novel or ambiguous event or object, while diversive curiosity expresses an effort to seek novelty or new experience for its own sake. In this research, both diversive and specific aspects of curiosity have been included in the concept of curious and exploratory behavior. Assessment procedures in the study have also incorporated measurement techniques generally prevalent in the field: visual exploration, questioning, object exploration and teacher ratings.

It might be noted that Maw and Maw, in a recent review of the field (Maw and Maw, in press), have pointed up the limited utilization of curiosity concepts and research in school situations and have urged the specific development of the field in this direction. They have also suggested further detailed study of the transactional relationship between person and environment, in relation to the arousal and expression of curiosity. In that framework, it seems particularly pertinent to study the transactions between children who have different exploratory response styles (or "traits") and the kind of open educational environment that specifically values and encourages exploratory behavior.

The Areas of Child Study and the Research Hypotheses

The study addressed itself to four areas of functioning in the classroom: curiosity and exploratory behavior in the classroom; mastery and learning; autonomy and self-direction; and interpersonal contacts. Each area will be briefly described in terms of the salient questions raised and the theoretical hypotheses associated with differences in exploratory style.

Curiosity and exploratory behavior in the classroom. Children were selected for study, in this project, on the basis of clear differences in curiosity, as assessed by teacher ratings and tasks involving exploration. The definition of curiosity underlying these ratings and tasks stressed the tendency to approach new experience with interest and anticipation, to ask questions, and to explore materials. The first research question that arises is whether such tendencies are consistently expressed, over a period of time, in a natural context. Do exploratory children approach new experience, explore objects and raise questions more than cautious children in the classroom? As already noted, such a question is particularly pertinent in open settings. Open classrooms place value on exploratory behavior. They are structured to provide a variety of experiences and materials, and to encourage and reinforce the child's verbal curiosity and explorations of events, activities and materials. The study tested the theoretical hypotheses that curious-exploratory children would respond more vigorously to such a context, expressing more curiosity and exploratory behavior in the classroom than cautious-reserved children. There are, of course, theoretical reasons why such differences might not occur. Research has shown that differences in exploratory tendencies are systematic but not completely consistent in all circumstances, and ecological theories suggest that environmental structures have power to draw out similar behavior from different kinds of individuals. The most logical hypothesis, however, would be that children with a stable exploratory style express exploratory behavior more consistently, in natural circumstances, than cautious children, and the study tested this assumption.

Mastery and Learning. Three aspects of the children's ongoing learning were evaluated: the range and kinds of activities they engaged in, the thinking processes they expressed, and the expression of feelings about learning and their own mastery. The focus of evaluation was not on formal achievement, which is better measured in later grades and can be evaluated, as necessary, by formal testing. In the open environment, however, much of the emphasis is on process. The expectation is that children in such environments will engage in a variety of activities and will be intensely involved in thinking and learning. The question arises whether exploratory and cautious children function differently in this respect. Do they differ in the range and content of their activities? In their processes of thought and communication? In the feelings they express about their own efforts and about learning? In this area, the hypotheses were not self-evident, either theoretically or from previous research. There is one exception. It might be expected, theoretically, that exploratory children would engage in a wider range of activities, in keeping with their exploratory tendencies, than cautious children. Aside from this, there were no well-based expectations. It was of considerable interest, however, to assess whether exploratory and cautious children do, in fact, engage in different kinds of activities, express ideas to a different extent or at a different level, or express different feelings about mastery. In this area, study of the children's behavior was expected to be primarily hypothesis-generating.

Autonomy and self-direction. The open classroom provides considerable opportunity for the child to function autonomously. The child is encouraged to select activities, seek out and use resources as needed, and carry through and elaborate the learning situation in a self-directed way. The educational approach places considerable value on the child's opportunity to feel responsible and effective, in this sense, and on the psychological importance of decision-making and self-direction for the child's growth. Do exploratory and cautious children differ in their autonomous behavior in such classrooms? The hypothesis in this area of functioning was theoretically based. To the extent that curiosity and exploratory behavior are self-motivated activities, exploratory children would be expected to function in more independent, autonomous ways in the classroom. Several aspects of autonomous, self-directed behavior were investigated for possible differences between exploratory and cautious children: the autonomous selection of activities; the child's persistence; independent elaboration of learning activities; the self-directed use of human and material resources for learning; and the autonomous implementation of classroom procedures.

Interpersonal contacts. Open environments are structured for easy contact among people. Children are expected to seek out adults as needed and to work and talk with other children. Such a structure is considered a more natural environment for children than the self-contained silence of more traditional environments. It is also considered a positive resource for learning and for the growth of interpersonal relationships and roles in the child group. Do exploratory and cautious children in such environments differ in the amount of interaction with others? In their tendency to initiate contacts? In their proportion of interaction with teachers and other children? In the purpose and nature of their contacts with other people?

In this area, some predictions were possible. The initiative of exploratory children in exploring objects and events might theoretically be extended to the interpersonal realm. By this reasoning, exploratory children would be involved in more interaction with others than cautious children, and would more frequently initiate the contact. Beyond these expectations, however, it was difficult to predict differential patterns. Interpersonal contacts were investigated in some detail, however, in order to generate further hypotheses and to better understand children's social functioning in open classrooms.

The remainder of the report will present the design of the study, the research findings, and a discussion of conclusions and implications for theoretical and educational issues.

DESCRIPTION OF THE STUDY

Overview

The spontaneous behavior of 60 first grade children in six open classrooms was observed through the course of a school year.[1] Thirty curious-exploratory children and 30 cautious-reserved children constituted the study sample. The children were selected for study at the beginning of the year on the basis of their characteristic response styles, as measured by teacher ratings and individual assessment sessions. They were then observed in classroom activities through the course of the academic year. Observations were in the form of narrative and precoded records, and were focused on one child at a time.

In analyzing the data, the primary emphasis was on comparing the patterns of exploratory and cautious children. The material was also analyzed for total group patterns, however, so that characteristic child behavior in first grade open classrooms could be documented and described. In addition, the data were analyzed for general sex differences and for characteristic patterns of girls and boys within the exploratory and cautious groups. Analysis focused on curiosity and exploratory behavior in the classroom; patterns of mastery and learning; autonomy and self-direction; and interpersonal contacts.

Details concerning the selection of classrooms and subjects, the observational techniques, and systems of data analysis are presented in the following sections.

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[1] Twenty of the study children were followed into second grade. The follow-up data, however, will not be presented in this report.

Selection of Classrooms

The basic purpose of the research was to study children's behavior in open classrooms. The selection of appropriate classroom contexts, therefore, was a crucial first step. The investigator first contacted the administrators of local schools and programs known to have classrooms with an open orientation and explained the project's purpose and design. When permission was obtained to work in the school or program, the investigator discussed possible classroom sites with supervisory personnel, visited the classrooms to evaluate their suitability, checked the age range of the children, and talked with the teachers about the study. Study classrooms were selected on the basis of three criteria: their characteristics as open environments, homogeneity in the age level of the children, and teacher interest in participating in the research.

Open orientation. An informal checklist of relevant properties was used to assess the suitability of classrooms as potential settings for the research. While no single definition of an open classroom can serve as a criterion, certain basic characteristics are generally agreed on, as indicated in the introductory section. These include the flexible use of time and space, the availability of varied materials and activities, the opportunity for children to select activities, move about freely and interact with others, and the concept of a flexible teaching role focused on the guidance and mediation of learning rather than the direct transmission of knowledge. In keeping with these ideas, the investigator surveyed potential study classrooms for the teacher's conception of the educational task and teaching role, the design of the room, the availability of multiple materials and activities, and the children's possibilities for choice, movement and contact with other children.[1] Beyond a baseline of characteristic features there was considerable leeway for selection. The basic intent was to locate classrooms typical of the open environments in which many American children currently live and learn. In this rapidly expanding movement, classrooms vary in structure and program and, as a recent study has confirmed, teachers vary in the extent of their experience and the clarity with which they have worked out their own philosophy of open education (Bussis et al, 1976). The six classrooms selected as settings for the study are representative of adequate open classrooms. They varied in some respects but shared basic features of an open orientation, as will be indicated in the descriptive section below.

Homogeneous age group. Interage groupings are not uncommon in open schools, but such settings were not appropriate for this study. The design required the comparison of children who differed in response style but were comparable in other important respects, including age. The selection of classrooms with homogeneous age groups increased the pool of potential subjects in each class. It also facilitated the understanding of social interactions in the classroom, which could be studied without consideration of the special roles and relationships that obtain between older and younger children.

Teacher interest. The interest and willing participation of teachers and other classroom personnel were important considerations for selection, since the study involved the continuing presence of observers for many months. Some teachers find it difficult to be under observation on good days and bad, even if the focus is on the children, and some possible settings were eliminated because teachers were ambivalent about participation. In working with the teachers of the selected classrooms, the investigator and observational staff made strong efforts to accommodate to teacher needs and to work out any difficulties that arose during the year. The investigator also arranged some feedback sessions with teachers, as a means of reciprocating for their cooperation and courtesy.[1]

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[1] Formal techniques for measuring open environments were not used in this study. Detailed measurement was not required, since the study does not involve the comparison of environments, and available techniques presented some practical problems. The criteria used for informal assessment of potential study classrooms came from the same literature as the formal instruments, however, and were similar in content.

The following section describes the six classrooms. It should be remembered that the classrooms do not constitute a formal variable in the study. However, some suggestive differences in the functioning of children from different settings will be indicated informally in reporting the results. The following descriptions are important for understanding both the shared qualities of the open environments in which the 60 study children functioned and the unique qualities of atmosphere, teaching staff and population characteristic of each setting.

Classroom Characteristics

The study was conducted in four schools located in a large city on the east coast. Three were part of the public school system; one was a private school. The six study classrooms were located in these four schools. During the first year of the study, material was gathered in one first grade classroom in each school. During the second year, material was gathered in two additional first grade classrooms in order to increase the size of the study sample. These additional classrooms were located in two of the original schools and were taught by the same teachers.

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[1] The writer wishes to thank Dorothy Ballard, Susan Bowdon, Lois Hamilton, Ellen Reese, Pamela Selden, Susan Shatkin, Jean Uehling and their classroom assistants for their help and cooperation during the project.

1. Classroom D

School D was a public school located in the center of the city. The school had special status in the public school system. It drew on a larger geographical area than most schools and was consciously directed toward serving a mixed population of families and creating an open, informal atmosphere. It contained a number of unusual programs for children from disadvantaged backgrounds with special needs. School families represented an ethnic mixture and ranged from lower socioeconomic levels to relatively affluent middle class status. The first graders from this school were the most heterogeneous of the six study groups.

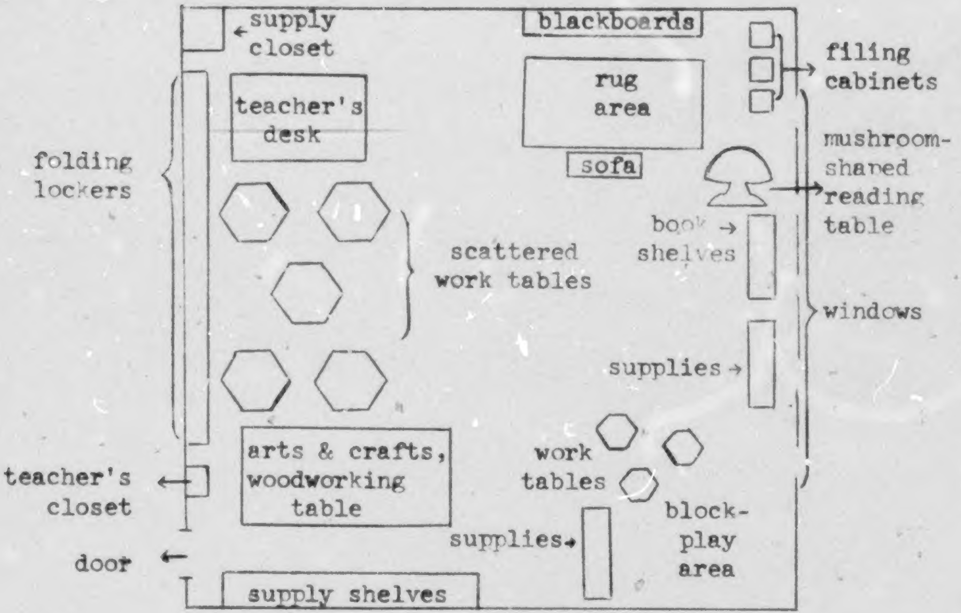
The school building itself was old and traditionally designed, but the internal atmosphere was informal. The school was conceptualized by its principal and teaching staff as an integral unit, expressing a philosophy of freedom and excitement in education. Relations between adults and children were informal, and children came and went freely in the school. There were discrete classroom units, but hallways were active places and children from different classrooms often merged in informal groupings. The total environment conveyed a sense of energy, movement and close contact among people.

The study classroom was standard in size, though the constant movement of children and some crowding of furniture and equipment made the room seem small. The focal point of the room was a carpeted area where teachers and children met together. This area was bounded on one side by an old green sofa, used a great deal by the children for talk and play. The rest of the room was filled with clusters of work tables and a variety of material-laden shelves and bookcases (See figure 1). Wall space and parts of the ceiling were covered with children's drawings and work, and these displays changed frequently.

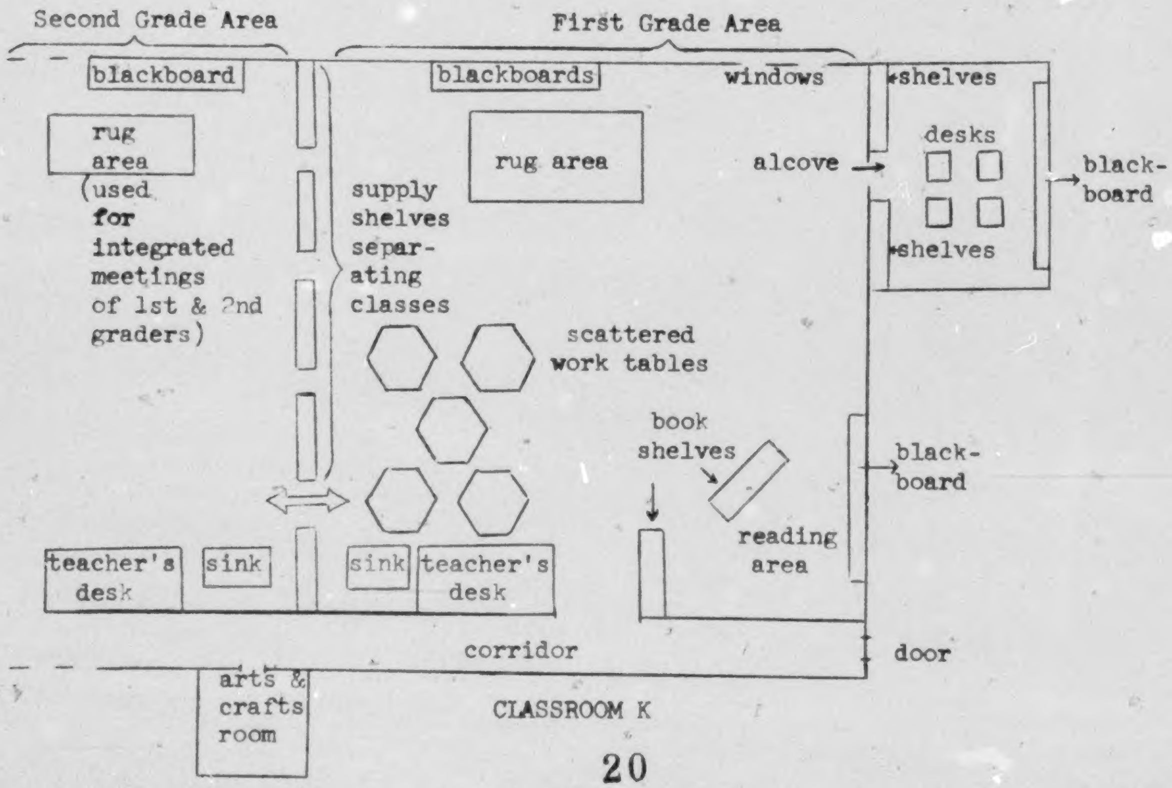
The class of 22 children was led by an energetic female teacher and a female student teacher. The teacher was affectionate and made frequent personal contact with the children. She served as a facilitator of the small work groups which were engaged in learning activities and she worked a good deal with individual children. She also led the whole group during meeting times, when daily activities were planned and discussed. The student teacher had a very similar style of personal interaction with the children. She also facilitated ongoing work groups, frequently moving among groups to check on the progress of individual children.

The daily schedule followed a general form but was quite flexible. The day began with a meeting time, during which activities were planned and selected by the children from a changing repertoire offered by the teacher. Available activities included painting, carpentry, collage, educational games with homemade materials and so forth. Children made their choices, then moved off in small groups to begin their morning activity. At some point, children would be called over to participate in a reading activity with the teacher. There was much emphasis on language development, usually in the form of story writing or experience charts to describe an event or some work the child had completed. The children had a short morning recess, then continued in their chosen activity. There was usually a meeting time before

Figure 1: Maps of the Study Classrooms

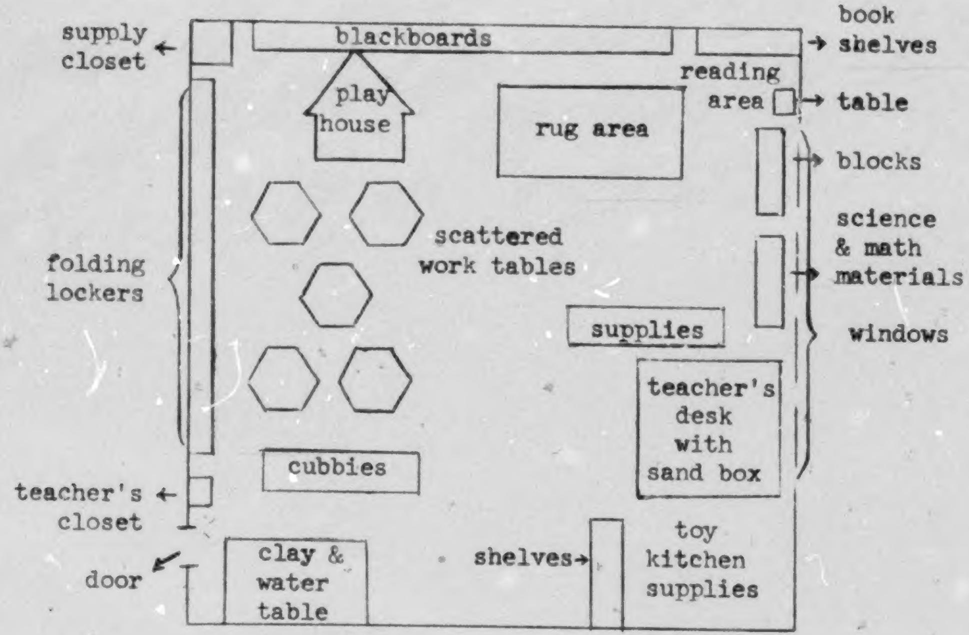

supply closet
blackboards
filing cabinets
teacher's desk
rug area
folding lockers
sofa
mushroom-shaped reading table
book shelves
scattered work tables
windows
supplies
work tables
teacher's closet
arts & crafts, woodworking table
block-play area
supplies
door
supply shelves

CLASSROOM D

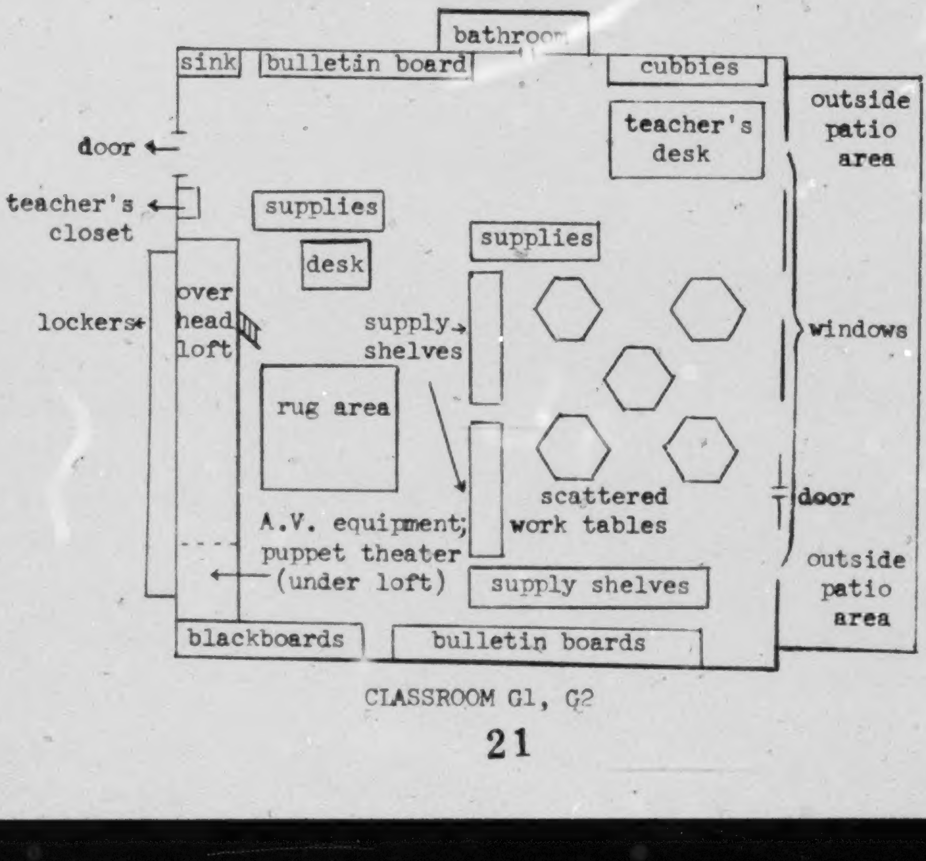

Second Grade Area
First Grade Area
blackboard
blackboards
windows
shelves
rug area (used for integrated meetings of 1st & 2nd graders)
rug area
desks
alcove
black-board
supply shelves separating classes
shelves
scattered work tables
book shelves
black-board
reading area
teacher's desk
sink
sink
teacher's desk
corridor
door
arts & crafts room

CLASSROOM K

Figure 1 (continued): Maps of the Study Classrooms


supply closet
blackboards
book shelves
reading area
table
play house
rug area
blocks
science & math materials
windows
scattered work tables
folding lockers
supplies
teacher's desk with sand box
cubbies
teacher's closet
door
clay & water table
shelves
toy kitchen supplies

CLASSROOM F1, F2


bathroom
sink
bulletin board
cubbies
outside patio area
teacher's desk
door
teacher's closet
supplies
desk
supplies
over head loft
lockers
supply shelves
rug area
windows
scattered work tables
door
A.V. equipment; puppet theater (under loft)
supply shelves
outside patio area
blackboards
bulletin boards

CLASSROOM G1, G2

lunch, when most of the children went home to eat. The afternoon was essentially a replication of the morning, though with more emphasis on arithmetic than on language arts. Scheduled activities outside the classroom included periods in the gym or visits to the library, and there were also some trips outside the school. Children also had the option of participating in the activities of another classroom from time to time.

Overall, this first grade classroom was characterized by a minimum of structure and a great deal of autonomous choice, movement and diversity. The children were free to choose many of their own activities and to mix as they wished with other children. They were also free to approach the teaching adults at any time with personal or work-related concerns.

The Follow-Through Settings: Classrooms K, F1 and F2

Three of the classrooms were part of an open education Follow-Through model implemented in several of the city's schools.[1] As in most major cities, there were several theoretically distinct Follow-Through programs in the city, coordinated administratively through the public school system. Each model had its own self-sufficient structure and procedures, related as much to the philosophy and program of the national sponsoring institution as to the local school system. Within each model there were local supervisory personnel responsible for all model sites, as well as an advisor-coordinator for the model in each participating school. In addition, the national sponsors conducted orientation sessions, provided material and curricula for the program, and maintained continuing contact through personnel who visited regularly to help and advise the local staff. In the case of the open education model, the local coordinators had also established a lively Advisory Center in the city. Workshops, materials and a variety of other services were available to their teachers and other teachers in the district. Teachers in the study classrooms, therefore, were part of a network centered around the programs and principles of their open education sponsors, and they had access to a variety of supportive services.

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[1] Descriptions of the national Follow-Through program and the different Follow-Through models can be found in Maccoby and Zellner (1970) and Bissell (1973), among other sources.

2. Classroom K

School K was located in a primarily residential part of the city, with a predominantly black population. The school as a whole had a very high percentage of black children and the selected classroom contained children from relatively low income families, as stipulated by the Federally funded Follow-Through program.

The school was a comparatively new, open-space structure. It had been built in an architecturally advanced style and was divided into very large units, without walls, each of which served four classroom groups. In many sections of the school, class groups remained essentially self contained and discrete, though this was not, perhaps, the architectural intent.

Classroom K occupied an area to the far right of one such series of four unwalled units. There was considerable contact and interaction between this group of 26 children and an adjoining second grade group. The two teachers were friendly, some group activities were shared, and children moved around the combined space with freedom. However, these two class groups were clearly separated from the two other classes which occupied the remaining space in the unwalled area. Despite contact with the neighboring second grade group, Classroom K had an identity of its own. It was geographically separated by a line of bookshelves filled with materials and supplies. The back wall of the classroom contained a blackboard, and the space in front of the board served as a gathering place for meeting time. An adjoining area was bounded off on three sides by shelves, forming a relatively private unit where children could play, work or read. The remaining class space was filled with clusters of work tables. A small alcove at the far right of the area was used by the teaching adults when they worked with small groups of children, and the class made extensive use of a separate room, which had material and facilities for painting and crafts (See figure 1). Walls and bulletin boards in the classroom area were decorated, primarily with teacher-made displays. The entire area was carpeted and well lit, and the physical design of the school made the area seem more spacious than it was. The open-space design also contributed to a noticably high level of noise, though this seemed more disturbing to the adults than the children.[1]

There were several teaching adults in classroom K. Besides the principal teacher, there was a teacher's aide, a parent aide whose daughter was a member of the class, and a student teacher. All were female. The teacher maintained primary responsibility for the classroom, but the Follow-Through advisor in the school was a valuable resource for her and the more experienced teacher in the neighboring class was also helpful. The teacher spent much of her time working with small groups of children on specific learning tasks, and she directed the meeting time activities of the total group. The aide helped with small group work. The teacher and aide were clearly perceived by the children as their major adult resources, and children contacted them with questions and problems. The parent aide focused on some specific learning tasks organized by the teacher but was principally involved in checking homework and, at times, in mediating child behavior. The student teacher was relatively tangential to the life of the classroom throughout her stay. In addition to these adults, children had contact with the teacher and aides of the neighboring class, who knew them well and with whom there were often informal exchanges. All in all, the children of this group had access to an abundance of adults.

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[1] The greater effect of noise in open-space structures on adults than children has been noted by other investigators, who find that teachers may compensate by restricting activities or attempting to control the noise in other ways. (Brunetti, 1972; Gump, 1975) This may have been a factor in Classroom K, where some of the adults seemed particularly concerned with controlling the children.

The class day began with a meeting time. Then children moved into reading groups, working either on structured tasks with peers or on more open activities facilitated by a teaching adult. After about an hour there was a short recess. Back in class, some children had free choice of activities while others worked on language or arithmetic until lunch. Most children ate in the school cafeteria. Following lunch, children had an extended free activity period, during which they could choose what they wanted to do, and with whom. Activities included painting, crafts, clay, puzzles, blocks of various kinds, and so forth. At the end of the day, children went to resource rooms, rotating among the library, gym, art room and music room on different days. The schedule was occasionally varied by special activities, such as an outside trip.

For an open setting, activities and schedules in this setting were comparatively structured. However, there were also periods of free choice each day, a variety of activities to choose from, and a great deal of opportunity for children to move about, relate spontaneously with other children, and manage their activities autonomously.

3 and 4: Classrooms F1 and F2

School F was located in the same area of the city as School K and also served a predominantly black population. Physically, however, the two schools were quite different. School F was traditional in architecture and quite old. Within this school there were several Follow-Through classrooms from kindergarten through third grade, all of which followed the open model. These classes tended to form a strong sub-system within the school, which was basically traditional in its overall orientation toward education. Follow-Through classrooms were self-contained and standard in size but arranged differently than other rooms in the school. Follow-Through teachers also had access to special materials and the help and advice of the model coordinator in the school. Classroom groups F1 and F2 were successive first grades within this structure, and were taught by the same teacher and aide. F1 was the observational site the first year of the study, and F2 was the second year site.

The classroom which housed the study groups was a highceilinged room, with coat closets along one side and large windows along the opposite wall. The arrangement of the room was essentially the same both years of the study. The room was organized into sub-areas, separated by shelving or tables. An area in the back of the room contained a rug and was used for meeting time. The central area was occupied by clusters of tables, and around the edges of the room were small resource centers. These were arranged with material and equipment for different kinds of activities, such as science, cooking, sewing, and sand and water activities.[1] Easels for painting were set up in the hall during free choice times. Near the rug area was a large playhouse, which was a favorite play location for many children. A mixture of teacher-made materials and children's work was displayed around the room (See figure 1).

The teacher of this group had a quiet, firm, respectful style in working with the children. Characteristically, she tended to mobilize attention, in these classes of 32 and 33 children, by lowering rather than raising her voice. She worked sometimes with small groups of children, and sometimes moved around working with individual children. Like all the teachers in these classrooms, she also met each day with the whole class, at certain times, for discussion and other group activities. The female aide in this classroom also worked with reading groups and checked on the work of individual children. The aide's style was very straightforward and direct. Teacher and aide seemed to use well their somewhat distinctive and complementary approaches to the children.

The morning schedule was relatively structured. Homework was checked by the aide, as the children entered in the morning, and children then worked in small groups on arithmetic, while the adults circulated among them. After a short outdoor recess in mid morning, the children worked on a variety of reading tasks until lunch. After lunch, children worked on writing for about half an hour, then met at the rug as a total group for some class activity or discussion. Each child then selected an activity and the rest of the afternoon was freely organized by each child. As in School K, the daily routine was altered on certain days for rotating periods in the art room, library, gym or music room, and there were occasional outside trips. At some point during the year, the teacher also reversed morning and afternoon schedules.

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[1] The classrooms in School F were the only study setting that contained sandbox equipment.

These classes were relatively crowded, but did not seem chaotic or excessively noisy. The schedule, as in Classroom K, was relatively structured for part of each day, but children had considerable autonomy in their relationships and movements throughout the day, and there were periods when they were completely free to choose their own activities. The general atmosphere was busy and spontaneous both years, and the classrooms had an "open" workshop quality.

5 and 6. Classroom G1 and G2

School G was a private school established many years earlier by Quakers and still very much identified with the traditions of community life endorsed by its founders. The mixture of Quaker philosophy, high expectations for learning and an orientation toward active, open education produced an atmosphere unique to this particular school. The school was located in the same area of the city as Schools F and K, but it drew on a different population and from a much wider geographical area. The school primarily served the children of middle and upper middle class families and most of the children were white. There was a small percentage of black children, however, and the school maintained a scholarship program for less affluent families.

The school consisted of several buildings on a small campus. Children used various parts of the campus for different purposes, but the first graders, along with other young groups, were housed on the ground floor of a two story modern building, with outdoor play space of their own adjacent to the classrooms. The rooms were similar in size to those in the public schools, but a sense of spaciousness was enhanced by the access to the outdoors and the general sense of space on the campus. Class groups G1 and G2 were successive first grades in this school. They were taught by the same teacher in the same room, which was arranged essentially the same both years of the study.

One of the outstanding features of this room was an overhead loft, which ran for half the length of the room along one wall. Children could climb a ladder to this loft, and it was frequently used by individual children, pairs or threesomes, for reading and quiet activities. Directly below the loft was a carpeted area used for class meetings and activities. One wall of the room was entirely glass, with a door that opened to the outside patio. The other walls had blackboards, maps and displays of both teacher-made material and children's work. Work tables were grouped throughout the room, and there were several irregularly placed bookshelves, containing supplies and materials, including puzzles, games, drawing material, simple weaving equipment and so forth (See Figure 1).

The female teacher was assisted the first year by a male aide and the second year by a female aide. The teacher had high expectations for the children, and a quiet, friendly, workmanlike manner. She allowed the children considerable independence, though she found the children in the second year's group somewhat more impulsive and difficult to manage than those in the first group. The teacher was clearly responsible for curriculum and classroom activities. She spent her time working with small reading groups, conducting discussions and activities with the class group, and working with individuals. Children came and went freely with questions for the teacher as she worked with particular small groups. The general responsibility of the assistants, both years, was to work with small groups, with particular emphasis on reading and math activities.

In School G, the day began with free activities which lasted until all the children (25 each year) had arrived. The group then met for general discussion and the children went from there to their morning "work jobs". These were usually oriented toward reading and language skills but were designed with considerable variety of content and approach. There was a recess during the morning and usually a music period, after which work resumed. Children ate their lunch in the classroom, then went to gym. They began their afternoon with a quiet time, during which they rested or were involved in quiet activities. Art and math activities occurred in the afternoon and, again, children had leeway to work in a variety of ways. On some days, children went to science and there were occasional field trips related to curriculum topics.

These classrooms were busy, informal, and very purposeful in atmosphere. There was a strong emphasis on learning activities, and there was little of the unstructured material, such as sand or blocks, often found in early childhood open settings. Also, there was not a great deal of completely open choice in the daily schedule. Yet within this structure and emphasis, the children had considerable independence, not only to talk, be with other children and move around freely, but to conduct their activities at their own pace and in their own way. They knew what they were expected to do and had very easy access to adults and other children as they did it. It was probably an important factor in these classrooms that many of the children came from professional middle class families. The informal atmosphere, the work-oriented attitudes and learning activities, and the teacher's expectations for the children were, for most, a familiar part of their life experience.

These six classrooms shared certain general features. In all cases, teachers met with the whole class for planning and discussion at certain times during the day, but they worked principally with small groups and individual children and were accessible to any child at almost any point. The classrooms were organized into separate areas, work tables were movable, and material was available on shelves and in drawers where children could take what they needed on their own initiative. Children had constant contact with other children and considerable freedom of interaction. All classrooms had some designated times for reading, language and math activities, but there was also a variety of materials available and there were periods of freely chosen activity. Classrooms differed somewhat in the amount of firm scheduling and the degree of free choice available to the children, however, and they differed also in population, curriculum content, and individual teaching style.

Selection of Subjects

In each of the classrooms, 10 children were selected for study: 5 exploratory and 5 cautious. Selection was based on teacher ratings and children's reactions to two exploratory tasks administered in an individual session, as well as certain age and school attendance factors described below. All children in each class were rated by the teacher and, with rare exceptions, all children were tested. In all 134 children were tested.

Assessment Techniques

Teachers Ratings.

Each teacher rated the children in her class by sorting them into 5 groups, from most cautious to most exploratory, using a guiding definition based on the work of Maw and Maw (1961). This definition stresses the child's attitude toward new experience and his or her tendency to explore materials and ask questions (See Figure 2). Ratings based on such definitions have been reported in other research, and a very similar technique has been used in a previous study by the investigator (Minuchin, 1971).

Individual Assessment Session.

Each child was seen individually in a session that involved two exploratory tasks and lasted approximately 20 minutes. The session was conducted by the investigator (E), who brought the child to the room, gave instructions and maintained contact, and an assistant (O), who recorded responses, coded activities and operated a tape recorder.[1] The format of the session was standardized, and was pretested with 6 year olds in a school not included in the study. A summary description of procedures appears in Appendix A, and the exploratory tasks are described below.

Object-exploration. The object-exploration (or object-curiosity) task was based on previously reported assessment techniques for object exploration (Lucco, 1965; McReynolds et al, 1961;

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[1] Rosemary Malone was the assistant in this session. Patricia Libutti and Cecilia Tyler also helped to design and work out the session.

Figure 2

Guidelines for Teacher Ratings of Curiosity and Exploratory Behavior

To the Teachers:

I would appreciate your grouping the children of your class according to their style of functioning in the classroom environment. In particular, I am asking you to differentiate a style characterized by curiosity and exploratory behavior from a more cautious, reserved and non-exploratory style. Specific instructions for grouping are on the attached sheet. *

The descriptions below offer a way of thinking about the children to help you make your groupings. They describe the characteristics of a very curious and exploratory child and a very cautious and reserved child. Perhaps no child is exactly like these descriptions all the time, but use the ideas to guide you.

The highly curious and exploratory child:

Responds with interest to new experiences or ideas. Seeks out resources and initiates new activities; is an active participant in new activities offered to the group; volunteers; is one of the first to try things out.

Is observant about things in the environment. Notices new things, like changes in the room, new materials, the teacher's new sweater; calls attention to new events or changes ("Look! The snow is falling"; "There's a baby gerbil in the cage"; "All the magnets are on the wrong shelf" etc.)

Explores objects and materials. Manipulates, examines, takes objects apart, exploring their structure and use; uses a variety of materials; combines materials in new ways; explores new ways of incorporating material into learning tasks, creative products or play.

Asks questions. Wants to know more about things and people; seeks information and explanations; raises questions about cause and effect, how things work, what things mean ("Where is the other teacher today?" "How long can somebody be President?" "How does this work?" "If you put dye in the water, would it kill the fish?" etc.)

The highly cautious, reserved and non-exploratory child:

Retreats from new experiences. Hangs back; is not usually a volunteer or initiator of activities; does not actively seek resources; enters a new experience slowly and cautiously.

Does not seem to notice new or unusual things. Not usually the one to call attention to changes or unexpected events.

Does not actively explore or examine objects. Uses materials in familiar or prescribed ways.

Seldom or never asks questions. Asks questions mostly for permission to do something ("Can I use this now?" "Can I go out with Scotty?" etc.)

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* Teachers were instructed to sort the class into five groups from most cautious to most exploratory, using the middle category as little as possible.

Minuchin, 1971; Pangrac, 1963). Situations reported in the literature vary in the nature and number of objects provided, the amount of time allowed for exploration, and the details of scoring, but they all present the child with novel objects intended to stimulate exploration. The child's activities are then recorded and subsequently scored for involvement and variety of manipulations.

On entering the room, the child was seated at a table while E busied herself arranging equipment and papers. On the table were two objects: a complex stop watch on a lanyard; and a transparent box with magnetized detachable lid containing a hole in the center, with several paper clips clinging to the hole and scattered nearby on the table. Both objects allowed for a variety of exploratory manipulations.

The child's reactions were recorded by O for the first minute. Then E prompted the child to play, if he or she had not yet reacted; if the child had begun spontaneously, E confirmed the fact that it was all right to continue. The child's behavior was recorded for a total of 3 minutes. Reactions were scored for spontaneous approach to objects, span of involvement, questions, variety of manipulations, and so forth to yield an overall score for object-exploration. The coding form and scoring system for object-exploration appear in Appendices B and C.

Perceptual-verbal exploration: the "Discovery Board". This task was created specifically for the project. The purpose was twofold: a) to present a predominantly visual and verbal situation, since object exploration is primarily a motor expression of curiosity, and b) to present a complex "busy" stimulus, analogous to the usual stimulus quality of an open classroom, allowing some assessment of the child's exploratory behavior in such a situation.

The stimulus selected--the "discovery board"--was created at Bank Street College of Education as part of an extensive curriculum for early childhood programs (Black and Memling, 1970). At the time of the research, this material was not familiar in the study schools. One large stiff-backed folding picture (2 feet by 4 feet), labelled "In the Park", was used as the stimulus. The picture shows a busy park and playground scene, with over 100 child and adult figures engaged in a wide variety of activities (See figure 3).

The picture was placed in a standing position on the table in front of the seated child. The child was then asked to "tell about it." Responses were tape recorded, and the observer used a picture form to map the location of people and objects the child referred to. After 3 minutes, E closed the board briefly, asking the child what he or she remembered. The board was then opened for a second exploration and the child was asked to tell about any new things not noticed or mentioned before. The child's score was calculated as the total number of different elements described by the child in the first and second explorations combined. Some additional weight was given for elaboration, detail and fantasy in the responses, but the sheer variation in number of responses (ranging from 0 to 67) was the primary determinant of the child's score.

While there are no re-test data on the discovery board in this study, a subsequent study of 60 children conducted by Libutti (1976), using the same material and procedures, indicated a test-retest correlation after 2 months of r. 70. In the current study, the discovery board scores were also found to correlate significantly with other measures of curiosity, as indicated below.

Figure 3. Discovery Board: Form for Mapping Responses[1]

DISCOVERY BOARD FORM

Name:

School:

Date:

Examiner:

Observer:

INITIAL APPROACH

☐ 30 sec. prompt ☐ no reaction

MODE	PROC	CONT
Quest		
Statemt		
Visual		
Tactile		

ANNOTATIONS:

EXPLORATION PHASE I II

☐ full time, no prompt

☐ 30" sec. prompt ____/____ time

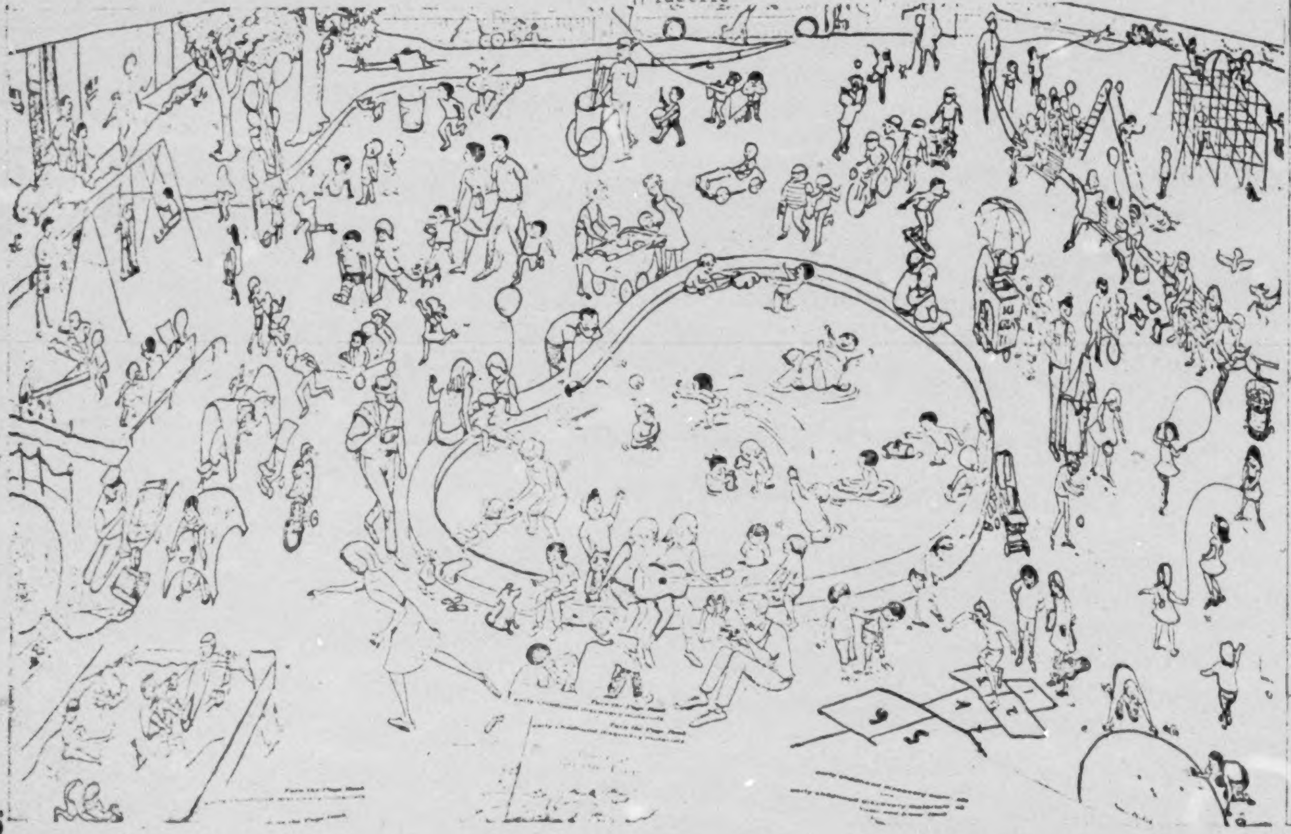
GLOBAL DESCRIPTIONS:

Total		Pool	
Bkgrd		Peo/act	
Gs/swlk		Other	

QUESTIONS:

Proc.	Cont.

PERSONAL CHOICE:



[1] Picture taken from Bank Street College Early Childhood Discovery Materials (Black and Memling, 1970).

Mean Scores and Intercorrelations Among Assessment Techniques

Mean scores of the total tested population on teacher ratings and tasks of curiosity and exploration are reported on Table 1. As is evident from the table, there were no significant sex differences in the total tested population on any of the measures.

Table 1

Mean Scores of Total Tested Population on Teacher Ratings and Tasks of Curiosity and Exploration

Assessment Technique	Girls (N=71)	Boys (N=63)	Total (N=134)
Teacher Ratings			
(Range 1-5)*			
Mean	3.3	3.3	3.3
SD	(1.38)	(1.49)	(1.43)
Object-Exploration			
(Range 0-19)*			
Mean	8.4	8.5	8.4
SD	(5.35)	(4.74)	(5.06)
Perceptual-Verbal Exploration: "Discovery Board"			
(Range 0-67)*			
Mean	33.7	36.7	35.1
SD	(15.02)	(15.62)	(15.32)

*The high figure, in all cases, indicates most exploratory.

Table 2

Intercorrelations Among Teacher Ratings and Curiosity and Exploration Task Scores for the Total Tested Population

	Correlations N=134	
Assessment Technique	(2)	(3)
1. Teacher Ratings	.16*	.37**
2. Object-Exploration		.25**
3. Perceptual-Verbal Exploration: "Discovery Board"		

*$p < .05$
**$p < .01$

Intercorrelations among the three measures appear on Table 2, which reports the correlations for the total group of 134 children tested. As indicated on the table, the discovery board scores correlate significantly ($p < .01$) with both teacher ratings ($r = .37$) and object-exploration ($r = .25$). There is also a reliable but weak correlation between teacher ratings and object-exploration ($r = .16$; $p < .05$). The relationships suggest some consistency of orientation among different modes of expressed curiosity and between child performance and teacher perceptions, though there is obviously considerable variance as well. Teacher perceptions are more highly related to verbally expressed curiosity than to object-exploration. The latter is least clearly related to other measures. This pattern of intercorrelations confirms the findings of other research, in which the motor forms of expressed curiosity tend to show relatively low correlations with other forms of curiosity.

Selection of the Study Sample

Subjects in each classroom were selected primarily on the basis of consistent scores or ratings on the three assessment techniques. That is, children were selected for study who had been rated as either clearly exploratory or clearly cautious by the teacher and whose scores on object-exploration and discovery board tasks were consistent with this rating. The selection was also based partly on age. Atypically young or old children in any group were eliminated from consideration, and the exploratory and cautious groups in any particular classroom were balanced for age as closely as possible. No effort was made to balance groups for sex or for the number of black and white children.[1] Previous school experience was an important criterion but presented no problem, since almost all children in all the settings had attended school at least one year before entering the first grade.

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[1] The number of black and white children in the exploratory and cautious groups was, in fact, balanced, though the number of males and females, as indicated in Table 5, was not.

In the sample of 60 children who were finally selected, the three measures of curiosity and exploration were highly correlated, as a function of the selection criteria (Table 3). The fact that the correlations were not more nearly perfect, even in a population selected for consistency, suggests that the expression of curiosity varies somewhat with different situations and modalities.

Table 3

Intercorrelations Among Teacher Ratings and Curiosity and Exploration Task Scores for the Study Sample

	Correlations N = 60	
Assessment Technique	(2)	(3)
1. Teacher Ratings	.56***	.67***
2. Object-Exploration		.60***
3. Perceptual-Verbal Exploration: "Discovery Board"		

***p $<$ .001

Characteristics of the Study Sample

Characteristics of children in the exploratory and cautious groups appear on Table 4, which reports mean scores on the three curiosity measures, and Table 5 which reports age and sex distribution in the two groups by classroom and for the total sample.

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Insert Tables 4 and 5
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Table 4

Mean Scores of Exploratory and Cautious Study Children on Teacher Ratings and Tasks of Curiosity and Exploration

	Exploratory			Cautious			Total Study Sample		
Assessment Technique	Girls (N=12)	Boys (N=18)	Total (N=30)	Girls (N=18)	Boys (N=12)	Total (N=30)	Girls (N=30)	Boys (N=30)	Total (N=60)
Teacher Ratings *									
Mean	4.8	4.7	4.7	2.1	1.4	1.8	3.2	3.4	3.3
SD	(.45)	(.49)		(.90)	(.52)				
Object Exploration *									
Mean	13.6	11.4	12.3	6.1	5.6	5.9	9.1	9.1	9.1
SD	(3.63)	(2.68)		(4.80)	(3.85)				
Perceptual-Verbal Exploration: "Discovery Board" *									
Mean	45.4	46.1	45.8	22.2	20.2	21.4	31.5	35.7	33.6
SD	(9.83)	(8.45)		(18.50)	(14.50)				

* High figure indicates most exploratory

As is evident from Table 4, subjects selected for the exploratory and cautious study groups had been rated very differently by their teachers. The ratings of the exploratory group averaged 4.7 on a 5 point scale, while ratings of the cautious group averaged 1.8. Means of the two groups on object-exploration and the discovery board were also significantly different (object exploration 12.3 vs. 5.9 and discovery board 45.8 vs. 21.4). In selecting subjects, it proved more difficult to find children who were consistently cautious on all measures than children who were consistently exploratory. The selected sample of cautious children varied more in their scores, therefore, than the exploratory group (Table 4). Nonetheless, the two groups were sharply different in their exploratory characteristics, as indicated by the means, and they serve as clearly contrasting groups for the comparative purposes of the study.

It will be noted from Table 5 that boys and girls are unevenly represented in the exploratory and cautious groups. There are more exploratory boys than girls and more cautious girls than boys. As indicated previously (Table 3), there were no overall sex differences on any measure in the total group of 134 children tested. It might have been expected, therefore, that the selected study groups would show no sex differences in composition. In choosing subjects, however, the principal criterion was consistency of exploratory or cautious functioning. Among children eligible for the study by this criterion, consistently exploratory children were more apt to be boys while consistently cautious children were more apt to be girls. The groups are not, therefore, balanced for sex. In a sense, this pattern was the study's first "finding". According to these data, compiled for selecting the sample, the average incidence of exploratory behavior in

Table 5

Characteristics of the Study Sample: Age and Sex of Exploratory and Cautious Children by Classroom

	Age[1]						Sex					
	Exploratory		Cautious		Total		Exploratory		Cautious		Total	
Classroom	Mean	Range	Mean	Range	Mean	Range	G	B	G	B	G	B
D	6-0	5-6 to 6-7	6-1	5-5 to 6-6	6-1	5-5 to 6-7	3	2	3	2	6	4
K	6-2	5-9 to 6-6	5-11	5-8 to 6-3	6-0	5-8 to 6-6	2	3	3	2	5	5
F1	6-0	5-5 to 6-5	6-1	5-7 to 6-6	6-1	5-5 to 6-6	1	4	4	1	5	5
G1	6-5	5-11 to 6-10	6-2	5-8 to 6-8	6-3	5-8 to 6-10	3	2	2	3	5	5
F2	6-2	5-10 to 6-6	5-11	5-7 to 6-8	6-1	5-7 to 6-8	3	2	3	2	6	4
G2	6-6	6-2 to 7-1	6-10	6-4 to 7-3	6-8	6-2 to 7-3	0	5	3	2	3	7
TOTAL	6-2	5-5 to 7-1	6-2	5-5 to 7-3	6-2	5-5 to 7-3	12	18	18	12	30	30

[1] Age in years and months as of September 1 of year of observation

the two sexes is not systematically different, but consistently exploratory behavior is found more often in boys while consistently cautious behavior is found more often in girls.

It should be noted that the identical sex distribution of 18:12 in the exploratory and cautious groups, and the total of 30 boys and 30 girls in the study sample, (Table 5), is completely fortuitous, since the selection process did not involve deliberate sex balancing of any kind.

The exploratory and cautious groups were balanced for age as closely as possible. As Table 5 indicates, the two groups are well matched. Children in the two classrooms of School G were slightly older than the children in other schools, as a function of admission policies, but differences among schools are not great. The age range among study subjects in each classroom was approximately one year.

Data Collection: Observation in the Classrooms

Observational Design

The study children were observed in their classrooms over a period of months. Each child was observed in a variety of situations. The data were collected in two forms, narrative records and precoded observations.

The observational schedule provided for successive rounds of observation in each classroom. In any given round, each study child was to be observed for specific periods of time in certain contexts. As an example, the first round in the first year required the following observations of each child: two 5 minute narratives and two 15 minute narratives recorded during periods of free activity; two 10 minute narratives recorded when the child was in a small group with an adult; and four precoded observations of 5 minute duration. Appendix D presents the schedule of observations for each year.

The observations of a given round were to be completed on each child in a classroom before the next round began. This was meant to ensure that the material on different children in a group would reflect their functioning at approximately the same points during the year. While there were inevitable lapses in this system, due to children's illness, scheduling complications and the like, the system worked well.[1]

As can be seen from the schedule, most observations were obtained during free activity periods, defined as time blocks when the child was not working with an adult, had the option of being alone or with others, could talk and move about freely, and had some leeway in activities. At times this meant a completely free choice of activities; at others the child had options within a curriculum ~~area.~~ The findings in this report are based only on data from these free activity periods.

For purposes of data analysis, a comparable number of free activity records has been analyzed for each child. Though there were more observations carried out on second year children, available data from the first year has been regarded as baseline for systematic analysis. The research findings presented in this report are based on 6 narratives and 8 precodes recorded for each of the 60 children. These 14 observations, spread over a period of several months, total one hour and 50 minutes per child. One hour and 10 minutes was obtained in narrative form, 40 minutes in precoded form.

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[1] Considering the well known hazards of field research, this project was basically very fortunate. Only one study child left during the school year, leaving early enough to be replaced by a qualified alternate, and all but one of the hundreds of required observational records was obtained successfully. Aside from sheer good fortune, the cooperation of teachers and the remarkable diligence of project observers was primarily responsible for the smoothness of data collection.

Observational Techniques

Two forms of observational record were incorporated into the study because each has certain advantages. Narrative records are rich in detail, describe the context and sequence of events, and provide a permanent record that can be analyzed and re-analyzed from varied perspectives. Precoded records lose considerable data, since they are a coded translation of actual behavior rather than a detailed description, but they are efficient, lend themselves to immediate and crisp analysis, and are generally favored in systematic research. Each of these techniques, as used in this study, is described below.

Narrative records. Narrative recording has been a familiar technique in the psychological field for some time, though the popularity of this procedure has waxed and waned over time. Most recently, this form of recording has gained strength as a data gathering method through the work of ecological psychologists and other researchers (Barker and Wright, 1955; Gump, 1975; Minuchin et al, 1969; Weinberg and Wood, 1975; Wenar, 1976; Wright, 1967).

Basically, narrative records try to capture what a well-focused TV camera would see, though with inevitable human limitations. Observers in this study were instructed to record all the child's activities and interactions including verbatim speech, and the behavior and comments of other people with whom the child interacted. In beginning a record, observers first noted identifying data (child, observer, classroom, date, type of activity, observational round), then described the set-up and activities in the room and the study child's activity and interpersonal context. The observer then followed the child for the designated observational period. She described in writing the child's verbalizations, interaction with others, movements, facial and postural characteristics, discernible moods and feelings, and so on. She was instructed to focus on descriptive aspects and to label clearly any subjective impressions or opinions. As soon as possible, after a day of observation, the observer dictated a running narrative record from these detailed notes. These were then transcribed and prepared for blind analysis.

Training in such methods is not difficult, for sensitive observers. The narrative records obtained for this study are extremely rich, documenting the range and individual quality of life in open classrooms. They have been used as the primary source of data in this study and have been systematically analyzed for patterns of curiosity and exploration, autonomous behavior, mastery and learning, and interpersonal contacts.

Precoded records. Precoded systems for observation are closer to the mainstream of American research than narrative recording, and there are a variety of techniques available for observing in classrooms. Many have been geared to teacher behavior or teacher-pupil interaction, however, and until recently almost all have been oriented to relatively traditional classroom structures. There are not many which focus on the individual child and which would be appropriate for the open classroom context.

In developing a system for the purposes of this project, established systems were surveyed and some general principles of timing and structure were adopted. The most relevant system for this project was the Differentiated Child Behavior system (DCB) developed at Bank Street College (Ross and Zimiles, 1974; Ross et al, 1975). Some sections from that technique have been adapted or directly incorporated into the project system, including most notably the DCB variables and definitions concerning the child's thinking process and communication.[1] No single system, however, covered the mastery, antonomy and interpersonal variables that were considered important in open classrooms and central to this study. A precode system was developed, therefore, specifically for purposes of the research. The system follows the format common to most precode techniques: behavior is observed in short time intervals and coded in pre-established categories as it occurs; observers are trained in the system and brought to a high level of reliability so that they can make instant reliable judgments about coding the behavior; and the data are summarized for systematic analysis by tallying the entries under each category.

The system was developed with the help of two research assistants who were to act as observers.[2] It went through a process of revision according to their experience with the timing, procedures and different variables. Some variables which could not be clearly defined or reliably judged were eventually dropped, and the final system reflects not only the interests of the study but the observers' experience with the possibilities and limitations of attentional focus in using it. The categories of the precode observation system are briefly described in Appendix E. The complete manual of instructions and definitions is not reprinted in this report but is available on request.

In using this system, observers first noted identifying data, then observed and coded behavior for a 5 minute period. Observers worked with a stopwatch, observing the child for 15 seconds and coding their observations for the next 15 seconds. They continued in this rhythm for a 5 minute period, coding 10 units of behavior during that time. As indicated in the list of categories presented in Appendix E, observers coded the child's interpersonal context; details of activity, thought and communication; contact with peers or adults; and autonomous behavior. During each interval, a specific category could be coded only once, though more than one manifestation of a general variable might be coded, if these were differently defined. Thus, a child could be coded in the same interval for teasing another child (L3) and expressing affection (L2), since these are defined as different aspects of social interaction.

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[1] The writer wishes to thank Sylvia Ross and other developers of the DCB for permission to use this material in the precode system.

[2] Debra Klinman and Judith Mintier

Figure 4 presents a sample record, filled in for a 5 minute observation. During the first 15 second interval, the child's context was coded as a creative-expressive-manipulative activity (3-annotated as "building a house") in company with a small group (7-annotated as "5 girls"). She was then coded as role playing or expressing a fantasy (D8), working cooperatively with others (K1) and, at the same time, as complaining about something (L4). In the next interval, the same context obtained, the child made some simple work-oriented comment (D1) and she continued her fantasy (D8). She also made a suggestion to another child (K2) and exchanged some sociable talk with other children (L1). In the third interval, she was essentially by herself but still part of the group (1/7) and was watching other children (O2). She continued in this context, expressing another complaint (L4) in the sixth interval and giving a direction or suggestion (K2) in the seventh. In the eighth interval, she was approached by the teacher and responded to her suggestion (H2),

SAMPLE RECORD OF PRECODE OBSERVATION SYSTEM

Round II

AVAILABLE TEACHING ADULTS (specify) Teacher; Aide; Assistant

TEACHER ROLE AND ORGANIZATION Teacher working with work cards; Aide circulating; Assistant with small group on science project

CHILD GROUP ORGANIZATION Small groups and individuals

ACTIVITY FOCUS Free activity

OBSERVER Dgk

DATE 4/7/75

TIME: Start 10:06

Finish 10:11

SCHOOL F2

CHILD - - - - -

TEACHER - - - - -

PAGE # 1

GENERAL CONTEXT		NATURE OF ACTIV/COMMUN/LRNG				NATURE OF INTERPERSONAL RELATIONSHIPS								SELF-DIRECT + TRAN		
						CONTACTS WITH TEACHING ADULTS				CONTACTS WITH OTHER CHILDREN						
MAT/ACTIV	INTERPERS	A CURIOSITY AND EXPLOR	B PERSIST AND RESIL.	C FEELING MASTERY	D EVIDENCE MASTERY	F ACTIV ORIENTED ASSIST.	E PLEASURE OR PAIN	G MISCEL	H RESPONSE CONTACT SUGGESTIO	I INIT OF NEW CONTACT	K WORK ORIENT CONTACT	L SOCIAL INTER-CHANGE	M RESPONSE TO CONTA SUGGESTN	N AUTO SELECT MAT/ACT	O AUT ELAB ACT.	P AUT MANA GEMEN
1. Concr-op 2. symb-sys 3. cr/exp man 4. fntsy play 5. motor 6. aud-vis 7. discuss 8. changing 9. other	1 alone 2 alone/T.A 3. (2-5)/T.A 4. (6-12)/T.A 5. class/T.A 6. twosome 7. group (3-5) 8. group (6-12) 9. changing	1. act. app 2. mob. altn. 3. obj-expl 4. curious	1. finish 2. resume 3. solve	1. express feeling	1. ident. 2. recall 3. sym sys 4. process 5. classify 6. causal 7. analogy 8. fantasy	1. seek info 2. permis. 3. guid. 4. ? mat 5. confus 6. other	1. affection 2. hurt, ill 3. routn. need 4. peer probl. 5. attn other	1. perm. 2. work 3. volun 4. other	1. quest 2. sugg 3. assist 4. admon 5. no resp 6. ongoing 7. other	1. one 2. group	1. coop 2. direct 3. quest 4. help 5. share 6. crit.	1. talk 2. affect 3. tease 4. compln 5. anger 6. mediate	1. follow 2. ignore 3. reject	1. mat/act 2. aspal 3. sugg. task	1. seek mat/info 2. obs.	1. clean replac 2. tran routi
3 building "house"	7 5 girls				8						1	4				
3	7				8, 1						2	1				
3	1/7														2	
3	1/7															
3	1/7															
3	1/7											4				
3	7										2					
2 word cards	2 tchr				3				2							
2	2				3											
2	2				3											

thereby changing her activity and interpersonal context (2, in each category). She then worked with the teacher on word cards, making active reading or writing responses (D3) during the remaining intervals.

Training of Observers and Reliability of Observations

Three research assistants, all doctoral students in educational psychology, served as classroom observers. All three gathered narrative data. Two, as already noted, were also trained in the precode system and gathered all the precode data.[1] Each observer gathered data in all study classrooms and observed each of the study children several times. Observers moved around from one class to another in accordance with class activity schedules, the teachers' stated preferences for particular observational days, and the research requirement for completing each round of observation. The observers had no knowledge of a child's designation in the study as "exploratory" or "cautious".

Narrative recording: training and reliability. Before project data were collected, observers entered non-project classrooms to practice narrative recording. Training was focused on gathering detailed records, on ironing out technical problems, and on obtaining descriptive rather than inferential or judgmental material. Observers practiced gathering records on the same child at the same time, later comparing their observations point by point. Observers then proceeded with their independent observational schedules in study classrooms. Since the two principal observers contributed approximately equal amounts of data on each child, and since all three observers gathered data on both exploratory and cautious children without knowledge of their designation, the comparability of narrative data on different study children was assured.

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[1] Debra Klinman and Judith Mintier gathered both narrative and precode data both years. Rosemary Malone gathered narrative data, principally the second year.

Precode observations: training and reliability. The precode system required much more extensive training than narrative recording, since judgments must be made rapidly, in such a system, on the basis of very clearly understood categories. Observers practiced the system with children from non-study classrooms. Variables and recording difficulties were discussed in regular meetings during the training period and, as noted, some adaptations were made in the system. When observers were comfortable with the system, a reliability check was conducted on records taken simultaneously on the same children. Overall interrater agreement was 86%. Agreement on context categories, unit by unit, was 100%, and agreement on substantive categories (A through P) was 78%. This was regarded as an acceptable level of agreement. Reliability was checked one year later and remained at acceptable levels. In addition, the design required that the observers obtain an equal number of records on all study children, assuring that any idiosyncracies in an observer's coding would be evenly distributed among the entire sample.

Data Analysis

Narrative and precoded observations were analyzed for the same variables, but the specifics of analysis reflect the different possibilities in the two forms of data. In general, the narratives provide more comprehensive data and have been analyzed for more variables. In one instance only, the narratives could not be reliably analyzed for a particular variable and the precodes provide the only systematic source of data.[1]

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[1] The proportion of time a child spent alone was analyzed only from precode data.

Precode analysis was relatively simple. For each variable, the 8 records for a child were tallied, either for the number of units during which certain behavior occurred[1] or for the frequency of a designated kind of behavior. Specific codings were combined for certain variables. For example, the tallies for all work and social contacts with peers were added together to arrive at a total score for interpersonal contact with peers.

Narrative analysis required the development of schemes of analysis and the testing of their reliability. Schemes were developed for mastery and learning (including curiosity and exploration), for autonomy and self-direction, and for interpersonal behavior. The schemes are presented, in summary form, in Appendices F, G and H.

Different research assistants analyzed the data in the three areas, after intensive periods of training, discussion, revision and reliability studies. When reliability was satisfactory,[2] raters proceeded with blind analysis of the 360 narrative records. All records were masked for the child's identity, the identity of other study children, and the classroom. Raters worked on individual records in random order and the six records of an individual child were not analyzed at the same time. Raters working in the different areas of analysis had no access to each others' ratings. Though scores in the three areas are based on the same observational material, they were obtained through completely independent rating processes and by different personnel.[1]

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[1] Maximum number of units would be 80 (10 units on each of 8 records).

[2] Interrater agreement for mastery and learning on 20 records was 83%. Interrater agreement for autonomy on 15 records ranged from 78% to 84% for three pairs of raters and was 71% for total agreement among all three raters. For interpersonal contact, interrater agreement on number of interaction units in 10 records was 86%; coding agreement on 20 records was 71%.

In analyzing the data, some variables were coded and tallied while others were rated. The choice of procedure depended on the nature of the category and the possibilities for reliably tallying separate instances of behavior. For example, the number of times a child contacted the teacher could be tallied but the degree of work persistence could not be counted in specific units. Variables such as the latter were rated, usually on a 3 point scale, in accordance with specified definitions of each scale point. Tallies for each child were cumulative across the six narrative records. Ratings were made on each record, and a child's ratings were later combined for an overall rating of the variable.

The analysis of autonomy was handled exclusively by ratings. The analysis of mastery, learning and curiosity included both frequency tallies (e.g. number of questions) and ratings (e.g. extent of fantasy). For analyzing interpersonal behavior, records were divided into separate units of contact, then coded for initiator of the contact and the content of interaction in each unit. This procedure resulted in frequency tallies, which were added across each child's six records. Further details of the coding appear in the presentation of findings.

The data were analyzed through a 2x2 Analysis of Variance (curiosity style X sex). Variables were first tested for distribution properties, resulting in the dropping of a few variables and the transformation of scores in other instances, when the distribution was unacceptable.[1]

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[1] Cathleen Moore and Rosemary Malone analyzed records for mastery, learning and curiosity. Barbara Sierocki analyzed autonomous behavior. Debra Klinman analyzed interpersonal contacts. Jeffrey Roth was helpful in reliability studies and some phases of data tallying.

RESULTS

The findings will be presented in four sections: the expression or curiosity and exploratory behavior in the classroom, mastery and learning, autonomy and self-direction, and interpersonal contacts.

Curiosity and Exploratory Behavior in the Classroom

In this area, the hypothesis was clear. Children who exhibited more exploratory behavior in a new situation were expected to express more sustained curiosity and exploratory behavior in the classroom than cautious children. The prediction was based on the assumption that curiosity has consistency, as a style of processing environmental stimulation, and that it would be consistently expressed over time in natural settings.

In selecting study subjects, exploratory style was defined through three aspects of functioning: approach to new experience, object exploration and verbal curiosity. This definition was also utilized for analyzing the observational data. Definitions of these variables for the precode system are presented in Appendix E (Section IIIA) and for narrative analysis in Appendix F (Section IV).

Approach to New Experience

The observed incidence of this kind of behavior was relatively low. In the 70 minutes of observation recorded in narrative form, half the children did not approach new experience at all. The range was 0 to 6 instances, and the average was less than one such instance.[1] Precode figures are higher, but the score is confounded by the inclusion of questioning and sustained interest as well as approach to new experience. The two sources of data are not completely comparable, therefore[2], and the incidence of spontaneous approach, per se, must probably be regarded as low.

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[1] The writer wishes to thank Dr. Alan Sockloff for valuable statistical advice and for monitoring the statistical process.

In retrospect, it seems likely that the data gathering arrangements were not optimal for tapping this kind of behavior. Completely new experiences are rare, in the course of a school day, even in open environments. Such experiences occur most frequently at the beginning of the year in a new classroom, or during periods when a teacher specifically introduces the children to new activities or materials. These would be optimal times for observing the tendency to approach or avoid new experience. In this study, it was not feasible to observe at the very beginning of the school year, nor to work out a schedule that would include systematic observations in all classrooms when new activities were presented. Data were collected primarily during free activity periods. There were varied choices and materials available at such times but there was usually no information about whether a child was approaching something for the first time. Data analysis was parsimonious, therefore. A child was coded as "approaching new experience" only when he or she gave clear indication of trying something new or of mobilizing the attention of others to a new object or event.

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[1] Because of distribution problems, scores were converted to a 2 point scale (presence or absence) for statistical purposes. The mean figures on Table 6 are based on these converted scores, but the mean score of the raw data is also less than 1.

[2] Narrative and precode measures of this variable are not correlated (r -.01).

Under these circumstances the incidence of such behavior was low, as already noted. When it occurred, the approach to new experience was more typical of boys than girls, according to narrative data ($F=4.49$; $p < .05$), but not significantly more characteristic of exploratory children (Table 6). It is interesting that 8 of the 9 children who approached new experience more than twice were exploratory children, suggesting that this may be a strong characteristic among particular individuals of this group. For more certain information, however, this behavior should probably be assessed in specific classroom situations, such as those noted above, which clearly invite the child's approach or avoidance. In the ongoing free activity situations observed for this study, there were no significant group differences between exploratory and cautious children, and expectations were not confirmed.

Object Exploration

Object exploration was defined as an overt examination of material: scrutinizing an object, taking it apart, exploring structure or function. Mean scores of exploratory and cautious girls and boys on object exploration are reported on Table 6.[1] There were no statistically significant differences between exploratory and cautious children or between girls and boys on either narrative or precode scores. The object exploration of exploratory and cautious girls, however, presents an interesting pattern. Cautious girls were least apt to explore objects, while exploratory girls averaged at least as much object exploration as boys

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[1] Narrative scores, with an original range from 0 to 10, were converted to a 5 point scale because of distribution problems. Mean scores on Table 6 are based on these converted scores. Precode scores were converted to a 2 point (absence-presence) scale because of similar problems and the high incidence of zero scores. Mean precode figures on Table 6 are also based on these converted scores.

Table 6

Curiosity and Exploratory Behavior in the Classroom:
Mean Scores by Exploratory Style and Sex

Variable	Observational Source	Form of Scoring	Exploratory			Cautious			Total Study Sample		
			Girls (N=12)	Boys (N=18)	Total (N=30)	Girls (N=18)	Boys (N=12)	Total (N=30)	Girls (N=30)	Boys (N=30)	Total (N=60)
Approach to New Experience	Narr.	tally[+]	.2	.6	.4	.4	.6	.5	.3	.6	.5
	Precode	tally	5.5	5.9	5.8	6.4	5.9	6.2	6.0	5.9	6.0
Object-Exploration	Narr.	tally	2.3	1.7	1.9	1.2	1.8	1.4	1.6	1.7	1.7
	Precode	tally[+]	.3	.3	.3	.2	.4	.3	.3	.4	.3
Verbal Curiosity											
Intellectual, work-oriented questioning	Narr.	tally	2.4	2.9	2.7	3.7	3.5	3.6	3.2	3.1	3.1
	Precode	tally	4.3	3.9	4.0	2.9	3.3	3.1	3.5	3.7	3.6
	Narr. + Pre.	combined tally	6.7	6.8	6.7	6.6	6.8	6.7	6.7	6.8	6.7
Social questioning	Narr.	tally	3.5	3.0	3.2	1.9	2.9	2.3	2.5	3.0	2.8
Total questioning (Int. + Soc.)	Narr.	combined tally	5.9	5.9	5.9	5.6	6.4	5.9	5.7	6.1	5.9

[+] These two measures were converted to a 2 point scale (absence or presence) for analysis because of the high incidence of zero scores and the nature of the distributions.

in either group (Table 6). The data suggest that there are no general systematic differences in object exploration between exploratory and cautious children in the classroom, but that there is a wider range of behavior among girls than boys, with cautious girls characterized by the least exploratory behavior of all groups.

While general differences in object exploration did not appear as expected, it may be useful to consider the children's use of objects in a broader, developmentally oriented, framework. Preschool children are often involved in object exploration per se, testing the properties of objects and building an understanding of the object world through such manipulation. School age children, however, begin to incorporate objects and materials into organized activities, guided by ideas and purposes. An analysis of the self-directed activities of the study children, to be reported in the section on autonomous behavior, suggested that exploratory children extended and elaborated their own activities more independently than cautious children. In the light of this finding, it may be that the exploratory group were more exploratory with objects but not in terms of manipulation per se. They may have expressed exploratory tendencies in the classroom through more vigorous and elaborate integration of materials into their ongoing learning activities. Such a formulation is speculative, of course. It does not alter the fact that exploratory and cautious children did not differ in sheer object exploration in the classroom, but it is of some developmental and educational interest.

Verbal Curiosity

Verbal curiosity was observed more frequently in these classrooms than the non-verbal forms of curiosity. Children averaged almost 10 questions apiece during the 110 minutes of total observation time, ranging from no questions (in only one case) to 23 questions per child. For purposes of analysis, children's questions were separated into those with intellectual content and those that were socially oriented. Intellectual questions expressed curiosity about meaning, about how something functioned, or about work-oriented situations or problems, e.g. "What does this word mean?" or "If we put dye in the water will the fish change color?" Social questions expressed curiosity about people and events e.g. "Where's the other teacher today?" or "Why are you crying?" Intellectual questions were tallied from both narrative and precode data but social questioning had not been included in the precode system and was tallied only from narrative records.

The distinction between intellectual and social questioning proved to be important. Exploratory and cautious children did not differ significantly in the total amount of questioning nor in the expression of intellectual, work oriented curiosity. They differed in social curiosity, however (Table 6). Exploratory children tended to express more curiosity about the lives and activities of other people, especially their peers ($F = 3.18$; p .08). There were no significant sex differences in any aspect of verbal curiosity, though cautious girls tended to express less social curiosity than other children. The fact that group differences were found in social but not intellectual curiosity seems part of an interesting pattern that has emerged from this study. Exploratory and cautious children were found to differ more in their social interactions than in their work oriented contacts with other people. These findings will be discussed further in reporting the interpersonal data.

Classroom differences were evident in the verbal curiosity data. Social questions were rather evenly distributed among the classrooms but intellectual, work oriented questioning was more prevalent in School G than in other settings. Children in the two classes of this school averaged 9.5 and 12.1 work oriented questions, while other groups averaged between 4.0 and 5.6 such questions. The particular combination of population characteristics and academic style in this school appears to explain the pattern. The study children in School G were slightly older than the other study children and they were a particularly articulate group who moved quickly in academic areas. The learning program was also more advanced in this school than in others. The fact that socially oriented questioning did not differ among classrooms suggests that social curiosity does not depend so much on the articulate nature of the children or the academic level and content of the program. Social curiosity seems to reflect, rather, the stylistic differences in curiosity among the children.

In summary: It was a theoretical hypothesis of the study that exploratory children would approach new experience, explore objects and raise questions in the classroom context more than cautious children. The data do not generally confirm this hypothesis, though where differences were found they were in the expected direction. Exploratory children did not seek out new experience, directly explore objects or raise more intellectual, work-oriented questions than cautious children, as might have been expected, but they did express more socially oriented curiosity about other people. Cautious girls, also, tended to explore objects less than other children and to express less social curiosity. Boys approached new experience more than girls but there were no other systematic sex differences.

Mastery and Learning

The analysis of mastery and learning focused on three major questions: Do exploratory and cautious children differ in the range and content of their activities? Do they express ideas to a different extent or at a different level? Do they express different feelings about their own mastery and about learning? As noted in the introduction, it was expected that exploratory children might engage in a wider range of activities than cautious children, in keeping with their exploratory tendencies, but no specific predictions were made concerning other aspects of learning and mastery.

Range and Content of Activities

Children's activities were classified in the following categories: concrete-operational activities; symbol systems (reading, writing or math); motor activity; audio-visual activities; fantasy and dramatic play; and subdivisions of creative, expressive and manipulative activities (blocks, painting, clay, sewing, jewelry making and so forth).[1] All children, it was found, engaged in symbol system activity at one time or another, and in some form of creative, expressive or manipulative activity. Activities utilizing audio-visual aids, sch as records or film strips, were rare, but the use of concrete-operational materials, such as puzzles, abacus, geoboards, number sorting materials and the like, was more common. Gross motor activity was almost non-existent, perhaps because observations were conducted indoors.

This pattern of activity appears to reflect the general intent and structuring of open classrooms for the early grades. In common

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[1] Definitions of all variables in the area of Mastery and Learning appear in Appendix E (precode system) and Appendix F (narrative analysis).

Table 7

Mastery and Learning: Mean Scores by Exploratory Style and Sex

Variable	Observational Source	Form of Scoring	Exploratory			Cautious			Total Study Sample		
			Girls (N=12)	Boys (N=18)	Total (N=30)	Girls (N=18)	Boys (N=12)	Total (N=30)	Girls (N=30)	Boys (N=30)	Total (N=60)
Range and Content of Activities											
Range of Activities	Narr.	Tally	4.4	4.3	4.3	4.3	3.8	4.1	4.4	4.1	4.2
	Precode	Tally	4.2	4.6	4.4	4.7	4.3	4.5	4.5	4.5	4.5
Skill Activities	Narr.	Rating*	4.7	4.4	4.5	3.8	4.0	3.9	4.1	4.3	4.2
	Precode	Tally	15.8	12.9	14.1	17.2	12.2	15.2	16.7	12.6	14.7
Fantasy and dramatic play	Narr.	Rating*	1.0	2.9	2.2	1.2	1.7	1.4	1.1	2.4	1.8
	Precode	Tally	3.3	5.8	4.8	4.8	7.8	6.0	4.2	6.6	5.4
Expression of Thinking Processes											
Simple, work-oriented ideas	Narr.	Tally	21.0	26.6	24.3	19.7	19.1	19.5	20.2	23.6	21.9
	Precode	Tally	16.8	19.6	18.4	15.0	19.0	16.6	15.7	19.3	17.5
	Narr.+Pre.	Combined Tally	37.8	46.2	42.7	34.7	38.1	36.1	35.9	42.9	39.4
Recall and Communication of experience	Narr.	Rating+	.7	.6	.6	.3	.3	.3	.5	.5	.5
	Precode	Tally+	.8	.6	.6	.5	.5	.5	.6	.5	.6
Complex thinking processes	Narr.	Rating*	2.5	2.1	2.3	2.5	2.0	2.3	2.5	2.1	2.3
	Precode	Tally	2.2	3.7	3.1	2.3	2.8	2.5	2.3	3.3	2.8
Expression of Feeling about Mastery and Learning											
Positive feeling	Narr.	Tally	3.5	3.6	3.6	2.4	2.8	2.5	2.8	3.3	3.1
	Precode	Tally	.7	1.1	.9	.8	.7	.7	.7	.9	.8
	Narr.+Pre.	Combined Tally	4.7	4.8	4.8	3.2	3.6	3.3	3.8	4.3	4.1
Negative feeling	Narr.	Tally+	.3	.4	.4	.4	.3	.4	.4	.4	.4

*For these variables, each narrative record was rated on a scale from 0-2 (non-existent, minor or major factor in the record); the child's ratings were then tallied across observations.

+These three measures were converted to a 2 point scale (absence or presence) for analysis because of the high incidence of zero scores and the nature of the distributions.

with other educators, most proponents of open education consider the development of symbol system skills a primary frontier for the early grades and they ensure the child's engagement with reading, writing and math. At the same time, they follow the implications of Piagetian thought and experiential traditions in education, stressing the importance of multiple media for expressing experience and consolidating knowledge. Thus, blocks, paints, clay, construction materials and so forth are provided in these settings, unlike most traditional first grades, and their use is considered part of the child's learning experience.

It is some demonstration of the successful implementation of program intent that almost all children in the sample (58) were involved in at least 3 categories of activity during the observation period, with a range from 2 to 9 different activities and a mean of 4. Perhaps more important, all children were involved in a mixture of skill activities, such as reading, writing or math, and the more creative-expressive-manipulative activities.

Table 7 presents the mean range of activities for exploratory and cautious boys and girls. Contrary to expectations, there were no differences between exploratory and cautious children in the range of activities they engaged in, and there were no significant differences between boys and girls. No particular group, in other words, made wider use than others of the available opportunities and materials in the classrooms.

In order to explore further the content of the children's activities, a detailed analysis was made of children's involvement in symbol system activities and fantasy activities. These were selected for analysis because they represent different processes for extending and consolidating knowledge, and because children of this age are in transition from a period when play and fantasy are the major modes for mastery to a period when symbolic skills are growing and can coexist with subjective, imaginative processes.

Skill or symbol system activities were defined as reading, writing or math activities of any kind. Such activities were tallied in the precodes and rated on narratives according to whether such an activity was a non-existent, minor or major part of the child's efforts during an observation period (ratings 0-2). For determining the rating on each record, the child's active involvement was the criterion. A child seated at a table with a reading book open but talking to other children throughout the observation would not be coded for symbol system activity, despite the work context.

Fantasy was defined as role playing, acting out a fantasy or making up stories. It might occur in combination with block construction or drawing or as an activity in itself. Preschools interested in development often set up extensive opportunities and materials for children's dramatic play, since this kind of fantasy is considered an important medium for expressing experience, rehearsing the social roles and activities of adults, and mastering internal pressures. The question in this study was whether these somewhat older children, given considerable freedom and material in the classroom, would also utilize this form of mastery, and whether exploratory and cautious children would differ in this respect. Fantasy was tallied from precodes and rated on a 3 point scale from the narratives in the same fashion as skill activities.

Reading, writing and math were prevalent activities in these classrooms. Children averaged over 14 tallies for active involvement in such activity during the 40 minutes of precoded observation.[1] There were no systematic differences in skill activities between exploratory and cautious children or between boys and girls, though precode means suggest more skill activity on the part of girls (Table 7). The differences among schools, however, were striking. Children in both classrooms of School G were involved in much more symbol system activity than children in other settings.

The pattern of fantasy behavior among these children was interesting. There seemed to be wide variation in children's use of this medium for expressing themselves and consolidating experience. For some children this was obviously an important mode. Fourteen children, for instance, were tallied for 10 or more instances during the 40 minutes of precoded observation time. Many of the children, however, seemed predominantly reality-oriented, at least in the school context. They concentrated on some form of skill activity, or were involved in various kinds of creative and manipulative activities, such as painting, drawing, making jewelry and so forth, without verbalized attendant fantasy. The expression of fantasy did occur, with some children, in connection with their drawing, block building or other activities, but approximately one-third of the sample engaged in no observable fantasy or dramatic play of any kind during the observation periods.

Fantasy and dramatic play were more characteristic of boys than girls. The fantasy play of boys was also more physically active, involving lively enactments of cowboys and crooks, batman, superman and TV commercials, while girls tended more toward dress up and housekeeping play. Systematic sex differences in the amount of fantasy were evident in the narrative data ($F=9.21$; $p < .01$), with similar though non-significant trends appearing in the precode material (Table 7). Classroom groups also appeared different. Dramatic play and fantasy activity was most prevalent among children in the Follow-Through classrooms (Schools F and K) and least of all among children in School G. There were no consistent differences, however, between exploratory and cautious children.

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[1] While precode scores are tallies of frequency, narratives were rated. Narrative scores thus provide no data on absolute frequency.

In comparing the proportion of skill and fantasy activities among different groups, an interesting pattern emerges concerning boys and girls: girls engaged in four times as much skill activity as fantasy activity, while boys engaged in only twice as much (Table 7). Such a pattern suggests a different distribution of time and energy by girls and boys in these different kinds of activity.

In summary: The data on children's activities suggest several points. The range of activities in these classrooms did not differ, on the average, for exploratory and cautious children, nor for boys and girls. The expectation that exploratory children might make wider spontaneous use of available materials and activities was not borne out. The distribution of time and energy invested in different activities, however, did show consistent variation by sex. Both boys and girls were more involved in symbol system activities than in fantasy or dramatic play, but boys expressed more fantasy than girls, and girls spent proportionally more of their time on skill activities than boys did. Different patterns of skill and fantasy activity were also evident in different classrooms.

The Expression of Thinking Processes

In an open environment, where children can talk freely, there is a constant flow of information about how children think. In this study, an effort was made to record children's thinking and to analyze their communications. Observers recorded verbatim speech, whenever possible, and noted process details of how a child worked with material. In using the precode system, they recorded whether a child was making a simple work-oriented descriptive statement, recalling and communicating some experience or event, or thinking in some complex way (e.g. describing a process or function, classifying or comparing, reasoning causally or thinking by analogy).

"In vivo" data of this kind offer the possibility for understanding how a child uses intellect spontaneously to organize ongoing experience. They enrich the body of information about cognitive processes which has been gained primarily from test findings and from children's responses to pre-established questions or tasks. Such data are difficult to obtain, however. It was difficult for observers to hear exactly what a child was saying in a noisy room. It was also difficult, in using the precode system, to instantly recognize "causal reasoning" or "classification", in the simple form that characterizes six year olds, even though the coding categories were well understood. Inevitably, therefore, the recorded data capture an incomplete portion of the ideas expressed by a child during the observation periods. The data have no built in bias toward exploratory or cautious children, however, nor toward boys or girls. They allow valid analysis of group differences, therefore, and provide some interesting examples of how the children were thinking. As noted earlier, there were no specific hypotheses in this area concerning exploratory and cautious children.

Both narrative and precode records provided data on the recall and communication of experience, the verbalization of simple work-oriented ideas, and the expression of complex thinking processes. Simple work ideas were tallied from both sources and added for a total score. Recall and complex thinking were tallied from precode data and rated on narratives by the system noted for other variables: namely, a scale from 0-2, indicating absence, presence and centrality in the narrative record. A child's ratings were added across all narrative records for a total score.

The Recall and Communication of Experience

The recall and communication of experience was defined as any communication in which the child attempted to convey the memory of an event or experience, e.g. a TV show, a joke, a family trip or event. Such communication was not observed very frequently. It was far less common, for instance, than work oriented discussions or social interchange. Many children (narrative: 32; precode: 26) were not observed communicating this kind of out-of-school experience at all. The incidence may have been higher during outdoor periods or at lunch or when the children first came into school in the morning. During these activity periods, however, discussion was more focused on immediate concerns.

Because of the low incidence and the uneven distribution of scores, this variable was transformed to a 2 point scale, signifying absence or presence, on both narrative and precode observations. The modified means are indicated on Table 7. Exploratory and cautious children differed significantly, according to narrative data ($F = 7.07$; $p < .01$). Precode means support the direction of findings, though not at statistically significant levels. There were no systematic sex differences. In general, it appears that this kind of interchange was not prevalent in the classrooms, during free activity periods, but when it occurred, the recall and communication of experience was generally expressed by the more exploratory children.

The Expression of Simple Work-Oriented Ideas

The expression of simple work ideas was observed much more frequently. Statements were coded in this category if they were simple identifying comments about the work, or a sharing of the child's work experiences and intentions; e.g. "I'm on page 32 now", or "I'm making this part of it blue". Statements were not coded in this category if they expressed more complex reasoning processes or the coding and decoding processes involved in reading or writing.

Simple work statments were tallied in both narrative and precoded records and could be combined, thus, into an overall score. As noted on Table 7, children averaged almost 40 such comments in the combined observation time of 110 minutes; the range was from 5 to 69 instances. This constant interchange and commentary about the ongoing work is an interesting phenomenon in itself and may be a hallmark of the open classroom. It is in sharp contrast to most traditional classrooms, in which children are usually not supposed to talk, and in which communications about the work may invoke injunctions against cheating or reprimands about not doing independent work.

Simple work oriented ideas were expressed to a different degree by exploratory and cautious children and by boys and girls (Table 7). Exploratory children were more prone to such expression than cautious children (combined tally: $F = 4.06$; $p < .05$) and boys expressed their ideas more than girls ($F = 4.39$; $p < .05$). The sharpest contrast was between exploratory boys and cautious girls.

As noted, there were no self-evident theoretical hypotheses in this area. The combined findings concerning the communication of experience and the expression of work oriented ideas, however, suggest a consistent pattern, whereby exploratory children tend to openly express and share their ideas more readily than cautious children.

Complex Thinking Processes

Complex thinking processes included describing a process or function, classifying or comparing, reasoning causally by connecting ideas and drawing deductions, and thinking metaphorically or by analogy. These categories were identified separately but were combined for a total complex thinking score.

The observed incidence of complex thought was considerably lower than the simpler forms. This undoubtedly reflected both the recording difficulties already discussed and the fact that integrative thinking is rarer in reality than simple commentary. Among the subcategories, children were most frequently observed classifying and comparing or describing processes and functions.

Spontaneous classification appeared primarily in verbal form. For example, one child, examining a new box of crayons she would be sharing with a classmate, pointed to a crayon and commented, "Peach is the color of skin. So when we color skin we can use this." This comment deals both with the shared color characteristics of two different things and the functional implications of their shared characteristic. Categorization was also non-verbal, at times. Non-verbal classification included such things as spontaneous sorting and comparative measurement of objects; for instance, sorting number cards into piles, or measuring wood scraps against each other to find the right sized piece for completing an airplane construction.

The description of processes or functions occurred in a variety of contexts. One child, for instance, helped another with details of finger weaving. She explained how to "pick the yellow one up" as the next step, pulled down one of the loops for the other girl so it would be long enough to weave with, instructed her to "use more of the loose loops", and showed her the box where they were kept. In another example, a child was involved in a game with others. He arranged the game cards, instructed others about their turn and explained to one of the girls why the rules prevented her from making a particular move. He also checked out the rules with another boy as he explained them, and gave joking advice to this boy which they both found funny on the basis of their shared understanding of what was _not_ a legitimate part of the process.

Analogy and metaphor were almost non-existent, which may not be surprising for the age level. Reasoning processes were not often recorded but were particularly interesting when they occurred. In one incident, for instance, two children were working on the creation of a picture dictionary. They were searching for objects in a magazine that would illustrate each letter of the alphabet. The cognitive task was quite complex, requiring that the child recognize the connection between the picture of an object, its spoken label, and the initial letter of a written symbol. In working over the 'i' page, Gail asked Barbara, "What do you call the things you put on Christmas trees?" Barbara went to ask the teacher and returned with the information "It's an ornament." Gail remarked "That begins with an 'o', not an 'i', but if we can find something silver we can call it an 'icicle'"--demonstrating an elaborate level of reasoning and problem solving. This same child later suggested to a girl looking for an 'i' word that she could use a picture of some plants, "because the plant's inside." This was another instance of an elaborate reasoning process, in which the child's ability to generate a non-tangible concept ('inside') that would fit the problem solving requirements seemed clearly beyond the cognitive capabilities of a preschool, or so-called preoperational child. As noted, these instances were not observed and recorded with great frequency, but they were of considerable interest as examples of spontaneous child thought.

In the analysis of compex thinking scores, precode data suggested a systematic sex difference favoring boys ($F = 5.43$; $p < .05$). Both the sex difference and the higher mean for exploratory children, however, were accounted for primarily by exploratory boys, who expressed more complex thinking than any other group (Table 7). The narrative data showed no style or sex difference.

In summary: There was a considerable amount of simple commentary and sharing of work ideas in these open classrooms during free activity periods. Exploratory children expressed their ideas and shared their experiences more readily than cautious children, though their expressed ideas were not necessarily more complex. Boys and girls did not differ in their communication about out-of-school experiences, which was in any event rare, but boys expressed more work-oriented ideas than girls. Exploratory boys expressed their ideas more than any other group, both at simple and complex levels.

The Expression of Feelings about Mastery and Learning

One additional aspect of mastery and learning was assessed: the children's feelings about their own work efforts and about learning. For some educators this is a crucial aspect of the learning process. Many of the features of open education, such as the choice of activities, the individual pacing and the access to other people, are aimed at involving the child in successful experiences, so that positive feeling can energize further investment in learning and a constructive cycle can occur. Involvement and affect are not easy to measure, since there is a large component of inner feeling, but it is possible at least to record a child's overt expressions of pleasure and self-criticism. Such expressions were analyzed for style and sex differences, though there were no specific hypotheses in this area.

The expression of negative feelings was analyzed only from narrative records, since this variable had not been included in the precode system. It included primarily verbal self-criticism ("I'm so dumb!", "My picture is awful!"), but could include obvious non-verbal expressions of dissatisfaction, such as a child making a disgusted face and angrily crumpling his paper. Self-correction was not necessarily coded as negative feeling, since the effort to meet a standard may be part of the child's growing effort to be competent and may be emotionally acceptable to the child. Negative feelings were coded only when the self-critical affect was clear and predominant.

The expression of such feeling was surprisingly rare, ranging from 0 to 4 instances per child. Over half the children (36) exhibited no obvious self-critical behavior at all and there were no differences between exploratory and cautious children or between boys and girls.

Positive feelings were defined as the expression of pleasure in the child's own accomplishments ("I did a great story!"; "I finished 3 pages already!") or in some learning material or discovery ("Hey look! The seeds we planted are coming up"; "This book tells all about frogs and its really neat."). Most instances were verbalized statements but a very obvious non-verbal instance could also be coded, for instance, if the child finished working on something, reared back in her chair and clapped her hands in obvious self-appreciation. Instances were tallied on both narrative and precode records and were then combined for an overall score.[1] Means are presented in Table 7. Exploratory children expressed significantly more positive feeling about mastery and their own efforts than cautious children ($F = 4.44$; $p < .05$). There were no significant sex differences.

The differential expression of positive affect is an interesting finding. It is difficult to know whether exploratory children were basically more satisfied with themselves and more excited about learning or whether cautious children had the same feelings but shared them less openly. The data do not suggest that cautious children were more overtly self-critical and the difference in positive affect may have been a difference in expressive style. Even in this case, however, there is some possibility that the expression of pleasure and excitement in itself brings a positive response from others and enhances the child's sense of investment and mastery.

In summary: The question was raised whether exploratory and cautious children would differ in learning activities, thought processes, or feelings about mastery. There were no specific hypotheses in this respect, except for the expectation that exploratory children might engage in a wider range of activities. This expectation was not confirmed; exploratory and cautious children made similar use of materials and activities in the classrooms.

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[1] Precode tallies required transformation, in separate analysis, because of distribution problems, but the combined score uses raw tallies from both sources and has a satisfactory distribution.

Exploratory and cautious children differed in some important respects, however. Exploratory children were more likely to verbalize work ideas, discuss their out-of-school experiences and express feelings of pleasure in what they were doing and learning. In this pattern there seems to be a consistent theme or style, involving a vigorous attitude and a tendency to share ideas and feelings openly.

In comparing the behavior of boys and girls, some significant differences were found. Boys were apt to express work-oriented ideas more than girls and to engage more in fantasy and dramatic play. The investment of time and energy in skill and fantasy activities also appeared to differ by sex. Boys and girls of both groups were characterized by considerable activity in symbolic skill areas and by a diversity of creative and expressive activities, but girls were proportionally more invested in skill activities than boys. Sex differences were not found in relation to the range of activities, the communication of out-of-school experience, or the expression of self-criticism or pleasure in learning. The expression of fantasy and of work-oriented ideas was most characteristic of exploratory boys, while the open expression of ideas and feelings was least characteristic of cautious girls.

Autonomy and Self-Direction

In the area of autonomous and self-directed behavior, there was a definite hypothesis to be tested. It was theoretically predictable that exploratory children might function in more independent, autonomous ways, over a period of time, in the classroom. This expectation was based on the reasoning that open classrooms value and provide opportunity for autonomous behavior and that exploratory children, by virtue of their characteristically exploratory style, might use this opportunity in a more self-directed way than cautious children.

Five aspects of autonomous behavior were evaluated in the data: 1) the autonomous selection of activities and materials; 2) persistence and involvement in work activities; 3) self-directed elaboration and exploration of activities; 4) the self-directed use of human or material resources to facilitate learning; and 5) the autonomous implementation of classroom procedures.[1] Definitions of autonomy variables appear in Appendix E (precode system) and Appendix G (narrative analysis). Each variable was rated on a three point scale from narrative data.[2] Selection, persistence and seeking information (akin to #4 above) were also tallied from precode records. Elaboration of activities was not included in the precode scheme, however, and autonomous implementation of procedures was dropped from the precode analysis because of distribution problems. These two variables were analyzed only from narrative data, therefore.

An overall rating of self-direction and autonomy was also assigned to each narrative record. In making this rating, the rater used cues from specific categories but made an overall judgment about the extent to which the child was at the center of his or her activities, functioning as a self-directed person in control of events. This overall score correlated significantly with all autonomy scores from the narrative records except the implementation of classroom procedures. It reflected particularly the child's persistence and the child's autonomous elaboration of activities (r .63 in both cases). These variables also correlated significantly with each other (r. 64), and there were significant intercorrelations, though of a lower magnitude, among choice of activities, use of resources, and classroom implementation.[1]

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[1] A sixth variable, the autonomous consideration of group principles in resolving issues, was part of the original analytic scheme. The variable was meant to tap spontaneous reference to the explicit or implicit rules that govern a child group, such as references to fairness, cheating or group agreements. This was so rare, however, that the variable was dropped. Developmentally, these children were probably young to articulate such principles.

[2] In this area, unlike others, the low rating (1) was applied to the most autonomous behavior and the high rating (3) was applied to the least autonomous behavior. Table 8 must be read accordingly. Precode tallies follow the usual procedure, with high scores indicating the most autonomy.

Narrative and precode scores of selection, persistence, and the autonomous use of resources were not significantly correlated with each other. Precode data in this area presented problems of distribution and low incidence and were poorly correlated with other variables. The narrative scores have been regarded as the more reliable source of data.

According to the overall rating (Table 8), there was some general tendency for exploratory children to be more self-directed than cautious children in their work behavior ($F = 2.86$; $p < .10$). As indicated in the earlier discussion about object exploration, they also tended to extend and elaborate their own activities in a more autonomous way ($F = 5.54$; $p < .05$). Some aspects of independent functioning showed no differences between exploratory and cautious children, however, and some aspects of the data are best understood by looking separately at boys and girls within the exploratory and cautious groups.

Exploratory and cautious children were similar in their level of persistent work activity though different in the tendency to elaborate

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[1] Choice of activities correlated r .32 with use of resources and r .41 with classroom implementation ($p < .01$ in both cases). The latter two variables were not significantly correlated. The overall autonomy rating correlated r .39 ($p < .01$) and r .21 ($p < .05$) with choice and the use of resources, respectively.

Table 8

Autonomy and Self-Direction:
Mean Scores by Exploratory Style and Sex

Variable	Observational Source	Form of Scoring	Exploratory			Cautious			Total Study Sample		
			Girls (N=12)	Boys (N=18)	Total (N=30)	Girls (N=18)	Boys (N=12)	Total (N=30)	Girls (N=30)	Boys (N=30)	Total (N=60)
Autonomy and Self-Direction (overall)	Narr.	Rating*	10.2*	9.7	9.9	10.7	11.1	10.8	10.5	10.3	10.4
Autonomous selection of activities and materials	Narr.	Rating*	14.7*	15.4	15.1	15.1	16.6	15.7	14.9	15.9	15.4
	Precode	Tally +	1.1+	1.6	1.4	1.4	1.0	1.2	1.3	1.3	1.3
Persistence and involvement	Narr.	Rating*	11.1*	10.4	10.7	10.2	11.3	10.6	10.6	10.7	10.6
	Precode	Tally+	1.9+	3.0	2.6	1.7	2.6	2.1	1.8	2.8	2.3
Self-directed elaboration and exploration of activities	Narr.	Rating*	13.0*	12.1	12.5	13.7	14.0	13.8	13.4	12.9	13.2
Self-directed use of human and material resources to facilitate work	Narr.	Rating*	13.7*	14.4	14.1	14.2	14.5	14.3	14.0	14.5	14.2
	Precode	Tally+	2.9+	2.5	2.7	2.1	2.1	2.1	2.4	2.3	2.4
Autonomous implementation of classroom procedures	Narr.	Rating*	15.6*	15.8	15.7	14.6	15.8	15.0	15.0	15.8	15.4

* Each narrative record was rated on a scale from 1-3 (1 = most autonomous) and the child's ratings were tallied across observations. Low scores on these narrative ratings indicate the most autonomy.

+ Precode tallies were cumulative. High scores on precode tallies indicate the most autonomy.

and develop their activities (Table 8). Work persistence and involvement was defined as sustained effort, the completion of tasks and the self-directed resumption of interrupted activity. These are the basic, responsible behaviors of children in a learning situation, and cautious children showed no less of such behavior than exploratory children. Precode data suggest that boys were more persistent than girls ($F = 4.28$; $p < .05$), but this statistically significant finding may reflect the greater incidence of interrupted activity among boys, leading to more specific tallies when work was resumed. Narrative data do not support a finding of sex differences in persistence.

The implementation of classroom procedures, another responsible maintenance aspect of autonomy, showed no general differences by exploratory style. There is some suggestion that such behavior was more characteristic of girls ($F = 3.23$; $p \leq .10$). It was essentially the cautious girls, however, who showed more of this behavior than other groups, which were all similar to each other (Table 8).

One of the interesting suggestions in the data, in fact, is that cautious girls and boys had different patterns of autonomous functioning. The order of means, on the overall rating of self-direction and autonomy, suggests that exploratory children were more generally autonomous in their behavior but that the least autonomous group were the cautious boys (Table 8). Inspection of other categories reinforces this image of the cautious boys. In no respect did they show more autonomy than others and in some categories, such as the autonomous choice of materials or the elaboration of activities, they showed the least. Cautious girls, on the other hand, seemed to go about their work with greater self-direction. Their strength seemed to lie principally in maintaining their effort and in responsible classroom work behavior. Exploratory children added to this pattern a greater initiative in modifying and elaborating the activities they were involved in. Such patterns are interesting in their implications, if supported by further study.

In general, the children in these classrooms showed considerable ability to handle the requirements and opportunities of an open environment. As will be clear in the next section, there was considerable interchange among people and it would be erroneous to describe the children as functioning independently of others, nor was this the goal. Far more than in traditional classrooms, however, the environment was structured so that children would retain some personal responsibility for their minute by minute behavior in the classroom. They were encouraged to pursue their work, find necessary materials, seek help when they judged it necessary, and make order when they were finished. There is no baseline against which to judge their autonomy as comparatively "great" or "little". However, the data and the impressions of observers suggest that they were learning and implementing such behavior quite well. The pattern and extent of autonomy was remarkably similar in the various classrooms.

In summary: There was support for the hypothesis that exploratory children would be more generally self-directed in open classrooms than cautious children, but the groups did not differ significantly on all aspects of autonomy. Exploratory children developed and extended their activities more autonomously than cautious children but there were no overall group differences in work persistence, the selection of activities, the autonomous use of resources, or self-directed implementation of classroom procedures.

Cautious girls and boys demonstrated different patterns of autonomous behavior. Cautious boys were the least self-directed group.

Cautious girls, however, were particularly self-directed in the maintenance aspects of their work, showing a capacity to choose and carry through their activities and to function responsibly in the classroom. Exploratory children added to this pattern a greater initiative in elaborating and extending their own activities.

Autonomous, self-directed behavior was evident in all classrooms, suggesting that the structure and reinforcement patterns in these open classrooms encouraged the children's independence and responsibility.

Interpersonal Contacts

There were two specific hypotheses concerning the interpersonal contacts of exploratory and cautious children. It was expected, first, that exploratory children would be involved in more interaction than cautious children, and, second, that they would more frequently initiate the contact. In this area a number of other questions were also explored, through no specific differences were predicted between exploratory and cautious children: How much interaction takes place in classrooms that allow spontaneous exchange and movement? With whom do children interact? Why do they seek out teachers? Do children help each other with their work or are they principally social companions? How much time do they spend working alone? How much aggression is expressed in the classroom context? and so on. To explore these questions, the data were analyzed for the amount and distribution of contact with other people and for the nature of contact with adults and other children.

For analyzing interpersonal contacts from narrative observations, each record was divided first into units of interaction.[1] A new unit was defined either by contact with a different person or by resumption of contact with the same person after an intervening activity. This identification of units yielded a tally of the *amount of interaction* a child was engaged in during the total observation time. Records were then coded for the category of *person*(s) with whom the child interacted (e.g. teacher, girl, boy) and the *role of the child* as initiator or recipient of contact. They were also coded for the *content and purpose* of the interaction. The latter included a general coding of the work-oriented or social nature of the contact, and specific coding of the content, such as helping another child, teasing, and so on. Definitions of the interpersonal variables for narrative analysis appear in Appendix H.

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[1] This approach was based on the work of Barker, Wright and their associates with specimen records (Barker and Wright, 1955; Wright, 1967), though procedures and criteria were modified for the purposes of the project.

Precode records were tallied for the amount of interaction, the number of contacts with adults or children, and the content or purpose of the interaction. Precode definitions appear in Appendix E.

Though narrative and precode data were both tallied for interpersonal contacts, scores were not combined for overall tallies because the two sources yielded slightly different data. Narrative records provided data on the initiation of contacts by the subject. The precode system did not allow for a judgment of initiator on each unit; since time units were small and coded behavior was often continuous with the previous unit, such judgments were not feasible or meaningful. In general, the scores from narrative observations reflect more natural behavior units and should be considered the more substantial source of information in this area.

The Amount and Distribution of Contact with People

There was considerable interaction in these classrooms during free activity periods. Children were involved in 47 separate interactions, on the average, during the 70 minutes of narrative precoding. They were also in interaction during 35 units of precoded observation out of a possible 80 units[1] (Table 9). While there are no norms against which to judge the meaning of such figures, some framework is provided by the precode tallies, which indicate that children were in interaction with others almost half the time they were observed. Such a pattern suggests that, whether or not a child initiates much contact, the open classroom context involves the child with other people to a considerable extent.

The expectation that exploratory and cautious children might differ in the amount of contact with others was not borne out. Exploratory children did not interact with other people significantly more often than cautious children did, though the exploratory mean for total interaction on narrative data is higher and suggests some tendency in this direction (Table 9). Sex differences present a clearer pattern. According to narrative data, boys interacted with others more than girls did ($F = 4.12$; $p < .05$). It is important to consider the subgroup patterns, however. It was primarily cautious girls who interacted less than other groups. This pattern appears again in more specific analyses presented later.

Most of the interaction in these classrooms took place among the children, rather than between children and teachers. As is evident from Table 9, over three-quarters of the contacts initiated by children were with other children, and this pattern was similar for all groups, showing no style or sex differences. The proportion of child contacts with adults would be higher at other points during the

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[1] Since 8 observations of 10 units each were tallied for a child, the maximum score would be 80.

Table 9

Interpersonal Contacts: Mean Scores by Exploratory Style and Sex

Variable	Observational Source	Form of Scoring	Exploratory			Cautious			Total Study Sample		
			Girls (N=12)	Boys (N=18)	Total (N=30)	Girls (N=18)	Boys (N=12)	Total (N=30)	Girls (N=30)	Boys (N=30)	Total (N=60)
Amount and Distribution of Contact with People											
Total interaction with adults and children	Narr.	Tally	47.2	51.0	49.5	42.1	49.0	44.9	44.1	50.2	47.2
	Precode	Tally	34.0	35.8	35.1	34.1	37.8	36.3	34.1	36.6	35.3
Proportion of contacts with children	Narr.	Tally (% total contacts)	.79	.81	.80	.78	.75	.76	.78	.78	.78
	Precode	Tally (% total contacts)	.77	.86	.82	.83	.85	.84	.81	.86	.83
Time spent alone	Precode	Tally	14.9	15.3	15.1	13.5	8.6	11.5	14.0	12.6	13.3
Contacts with Adults											
Child-initiated contacts (total)	Narr.	Tally	5.8	5.8	5.8	5.2	7.0	5.9	5.4	6.3	5.8
Learning and work-oriented contacts	Narr.	Tally (child-init.)	4.3	4.7	4.5	4.0	5.0	4.4	4.1	4.5	4.5
	Precode	Tally (all contact)	4.0	2.0	2.8	2.0	1.9	2.0	2.8	2.0	2.4
Social contacts	Narr.	Tally$^+$ (child-init.)	1.0	1.1	1.1	1.0	1.3	1.1	1.0	1.2	1.1
Adult-initiated contacts with children	Narr.	Tally	3.3	3.5	3.4	2.7	3.1	2.9	3.0	3.3	3.2
	Precode	Tally	3.0	1.7	2.2	3.0	2.8	2.9	3.0	2.2	2.6
Proportion of positive responses to adult contact	Narr.	Tally (% total resp. to adults)	.58	.28	.40	.50	.42	.47	.53	.34	.43

$^+$ Measure converted to a 3 point scale (0-1-2$^+$) for analysis because of the nature of the distribution.

Table 9 (continued)

Interpersonal Contacts:
Mean Scores by Exploratory Style and Sex

Variable	Observational Source	Form of Scoring	Exploratory			Cautious			Total Study Sample		
			Girls (N=12)	Boys (N=18)	Total (N=30)	Girls (N=18)	Boys (N=12)	Total (N=30)	Girls (N=30)	Boys (N=30)	Total (N=60)
Amount and Distribution of Contact with Peers											
Child-initiated contacts with peers (total)	Narr.	Tally	23.6	24.0	23.8	19.8	21.3	20.4	21.3	22.9	22.1
Proportion of contacts with same-sex peers	Narr.	Tally (% total child cont.)	.69	.69	.69	.79	.73	.77	.75	.71	.73
Initiated contacts for work purposes (total)	Narr.	Tally	18.3	21.9	20.5	19.1	20.0	19.5	18.8	21.1	20.0
Initiated contacts for social purposes (total)	Narr.	Tally	22.2	22.2	22.2	16.3	21.2	18.3	18.7	21.8	20.3
Nature of Work Contacts with Peers											
Helpful to others	Narr.	Tally (child-init)	5.6	5.0	5.2	4.9	4.5	4.7	5.2	4.8	5.0
	Precode	Tally (all contact)	3.5	4.1	3.9	3.6	3.3	3.5	3.6	3.8	3.7
Use of peers as learning and work resources	Narr.	Tally (child-init)	3.0	2.3	2.6	2.9	2.9	2.9	2.9	2.5	2.7
	Precode	Tally (all contact)	2.0	2.1	2.1	1.5	2.2	1.8	1.7	2.1	1.9

Table 9 (continued)

Interpersonal Contacts: Mean Scores by Exploratory Styles and Sex

Variable	Observational Source	Form of Scoring	Exploratory			Cautious			Total Study Sample		
			Girls (N=12)	Boys (N=18)	Total (N=30)	Girls (N=18)	Boys (N=12)	Total (N=30)	Girls (N=30)	Boys (N=30)	Total (N=60)
Nature of Social Contacts with Peers											
Sociable interchange	Narr.	Tally (child-init)	12.4	12.6	12.5	8.9	10.5	9.5	10.3	11.8	11.0
	Precode	Tally (all contact)	12.4	13.3	12.9	13.0	15.3	13.9	12.7	14.1	13.4
Aggressive-assertive interaction (verbal and physical)	Narr.	Tally[+]	1.6	1.7	1.7	1.1	1.3	1.2	1.3	1.5	1.4
	Precode	Tally[++]	1.0	1.2	1.1	1.0	1.0	1.0	1.0	1.1	1.1
	Narr. & Precode	Tally (combined raw scores)	2.8	4.4	3.8	3.1	3.0	3.1	3.0	3.8	3.4
Social distancing	Narr.	Tally	2.0	2.3	2.2	1.8	2.1	1.9	1.9	2.2	2.1

[+] Measure converted to 4 points (0-1-2-3^{+}) because of the nature of the distribution

[++] Measure converted to 3 points (0-1-2^{+}) because of the nature of the distribution day, of course, such as periods when teachers are leading group discussions or working directly with a small group of children. During free activity periods, however, teachers are also available to the children, and the children may contact them as often as they like. Such periods are an important part of the school day, in open classrooms, and the data suggest that children are primarily involved, at such times, with other children. The specific purposes for which they seek out teachers and are contacted by them will be discussed subsequently.

The time that a child spent alone, in these busy classrooms, was also a matter of interest. "Time alone" could be calculated only from precode data, and consisted of those observational units when a child was working alone, seeking materials, putting things away and so forth. It was not simply the reverse of time in interaction.[1] A child could be part of a group, attending to others without being in interaction; in such a case, the child would be coded neither for interaction nor as being totally alone.

The data suggest that exploratory children spent more time alone than cautious children ($F = 2.89$; $p < .10$). As the means of Table 9 indicate, however, they were most different from cautious boys who were least likely to spend time by themselves. Perhaps this is related to the finding that cautious boys were the least self-directed and autonomous of all the groups. Cautious boys seemed to present a pattern, in these data, of interacting a lot with others and spending the least time by themselves. Exploratory boys, on the other hand, also interacted a lot with others, but spent more time alone. The means of the subgroups are not sufficiently different to allow a confident description of typical subgroup behavior. The data do raise the interesting question, however, of whether there is some optimal balance between interaction with others and "private" time. Possibly the pattern of vigorous interaction mixed with time by oneself, which was exhibited by exploratory children, is more productive than the patterns exhibited by cautious children. The cautious girls spent time by themselves but were in less interaction than other groups, and the cautious boys were in vigorous interaction with others but spent less time by themselves. The implications of such patterns would be worth further intensive study in open environments.

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[1] Time alone and total interaction correlated $r = -.53$.

Patterns of interaction and time alone were also different in the different classrooms. Children in Follow-Through classrooms spent less time by themselves than other children (means of 7 and 11 in K and F; means of 15-17 in D and G). This was probably a function of the larger class size in School F and the open space arrangement in School K. Classroom D had a distinctive pattern of contact which was more centralized around the teacher than in other schools. Children in this classroom were in contact with teachers more than other groups, interacted somewhat less with other children, and spent more time by themselves.

In general, all groups were involved in considerable contact with others, and all groups interacted more with peers than teachers. Exploratory children did not differ from cautious children in the amount of contact, contrary to predictions, though expectations were partly confirmed with respect to cautious girls. These girls appeared to interact less than other groups. Boys interacted with people more than girls did, but sex differences may also be explained primarily by the pattern of cautious girls. Exploratory children spent more time alone than cautious boys, in particular, and the pattern of contact and time spent by oneself was also different in the various classrooms.

Contact with Adults

In traditional classrooms, the teacher is usually the central channel for the child who needs help or wishes to communicate something. Contact with other children is often against the rules and the child may not be allowed to leave his or her seat without permission. In open classrooms children have two alternatives to seeking out adults: they can contact other children, and they can move around to get supplies and handle activities on their own. At the same time, adults are an important resource and presumably available at all times. According to the material already reported, children did not contact adults as often as they contacted their peers. The question of why they contacted adults, when they did, has not yet been discussed, however, nor has the question of teacher-initiated contact with children. The data on teacher-initiated contacts are necessarily limited, in this study, since the focus for data collection was on the children rather than the teachers. It is possible to report the purpose of child contacts with teachers, however, as well as the extent of teacher contact with study children during the observational periods.

As already noted, children had less overall contact with teachers during these activity periods than with other children. According to narrative data, they initiated a little less than 6 contacts with adults, during the 70 minutes of observation, whereas they initiated 22 contacts with peers (Table 9). The range of contacts with adults was from no contact, in two cases, to a high of 17. Exploratory children did not initiate more contacts with adults than cautious children, despite expectations, and there were no sex differences in contacting adults either for work or social purposes. Cautious boys appeared to initiate somewhat more contact with teachers than other groups.

Children approached teachers mostly for learning purposes: to seek guidance and information for their work, to check on what they were doing, or to share their work products and experience with teachers ("Look at what I found in this book"; "I just finished my building and I want to write a story about it"; "Is this all right?"). For this specific kind of work-oriented help, they turned more to teachers than to other children. As indicated in Table 9, they initiated work contacts with teachers almost 7 times, in the combined narrative and precode observation time, whereas they used children as specific learning and work resources less than 5 times. Adults were seen, appropriately enough, as the primary repositories of knowledge and work authority, even though children shared many work ideas and reactions with other children.

There was very little contact with teachers for social interchange. Social contact was defined as sharing experience, expressing affection, complaining or seeking comfort. Such contact was very rare. Almost a third of the children (17) made no such contact at all, and only 14 children made 3 or more contacts of this kind. Such a finding is probably in clear contrast to most preschool situations, in which children come to adults with some frequency for contact, sharing and comfort. The six year olds in this study were obviously moving more toward peers for companionship and interchange. As noted on Table 9, there were no differences in social contact with adults among the various groups.

Adults contacted children to check on their work, make suggestions, express interest or exercise control. As indicated on Table 9, teachers initiated a little less than 6 contacts per child, during the combined observation time of 110 minutes. The range was from no contact at all with two children, to a high of 14 contacts with one child.

As might be expected, the pattern of teachers in the different classrooms was varied. The teacher in Classroom D initiated more contact, on the average ($\bar{X}$ 9.1), than other teachers, especially the teacher in Classroom K ($\bar{X}$ 3.4). There was, in fact, an interesting pattern in the different classrooms concerning the flow of contact between teachers and children. The amount of interaction was greatest in Classroom D, where the teacher made most contact and children were also active (combined teacher and child-initiated contact mean: 15.1)[1]. There was least contact in Classroom K (combined mean: 6.1), where children did not approach the teachers often and the teachers made relatively little contact with each child. In Schools F and G the means lay between these extremes. In these schools, the pattern of teacher and child initiative in making contact was different the first and second years and balanced out in an interesting way. With a group of children who initiated less contact, these teachers initiated more, and vice versa. The total amount of contact between teachers and children averaged approximately the same both years in each school (means from 8.9 to 10.7). There are interesting questions to be explored further concerning teacher style during free activity periods in open classrooms. These data suggest, though very tentatively, that some teachers may develop flexible intervention styles, varying with the tendency of the children to initiate contact on their own.

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[1] These means are based only on narrative data, since information on initiated contacts by children is available only from that source.

Beyond these general patterns of total interaction, the question arises as to why teachers contact children, when they do and whether they consistently contact some children rather than others.

Teachers in this study contacted children primarily for learning purposes. Just as the children sought teachers principally for specific work issues, the teachers contacted children mostly in a work context. They made 3 or more learning-oriented contacts with half the sample (29) and there were only 7 children with whom they made no work oriented contact at all. Their contacts were evenly distributed among exploratory and cautious children and among girls and boys.

The pattern of social contact was different. Social interchange initiated by teachers was rare, whether for amiable purposes or for exercising control. The contacts that did occur were not so evenly distributed among the various groups as the work-oriented contacts. Teachers made no social contact at all with 24 children, during the observational periods. They contacted boys more than girls (Chi Square = 8.86; $p < .01$), and made least contact of all with cautious girls. A breakdown for positive social contact and reprimand indicates that the sex difference does not lie in this distinction. Boys were not admonished more than girls, somewhat contrary to usual expectations and findings. To some extent, these data support the literature, which suggests that teachers tend in general to contact boys more than girls. In these data, however, the pattern is more differentiated. Teachers made equivalent contact with boys and girls of both exploratory and cautious groups for learning purposes. If anything, the pattern of work-oriented exchange was most vigorous between teachers and exploratory girls; the latter made most learning oriented contacts with teachers and were contacted most in turn, though group differences were small. It was in the rare social contacts that teachers systematically favored boys, giving least attention to the cautious girls.

One more aspect of teacher-child contact was analyzed: the nature of the child's response to a teacher's contact, suggestion or reprimand. These responses were analyzed from narrative records as positive or negative in quality, depending on whether a child accepted the contact or resisted or ignored it. As indicated on Table 9, slightly less than half the responses were positive, though the negative responses were not aggressive. In most cases they consisted of ignoring the teacher or raising a verbal objection. Exploratory and cautious children were not systematically different but there is some suggestion (not statistically significant) that girls were more acquiescent and boys less so. Exploratory boys in particular seemed to challenge adults, albeit mildly, more than other children (Table 9).

In summary: Contacts between children and adults were less prevalent than contacts among children and were focused primarily on learning matters. Children went more often to adults for specific work-oriented questions than to their peers, and adults contacted children primarily for learning purposes. The prediction that exploratory children would initiate contact more than cautious children was not borne out with respect to teachers, and there were no systematic sex differences.

Teachers showed no distinction in their work contacts with boys and girls or with exploratory and cautious children. Their rare social contacts, however, were directed more frequently to boys, and they paid least attention to cautious girls. There is some suggestion that exploratory girls had the most active work-oriented interchange with teachers, contacting and being contacted somewhat more than other groups. The data also suggest that interaction between teachers and children varies in amount from one classroom to another.

Contact with Children

The opportunity to work and socialize with other children is a major feature of open classrooms. Most proponents of open education view both intellectual growth and peer group relationships as important developmental frontiers during the school years. They advocate a structure in which children can work together, helping and using each other as resources, and working out issues of friendship, conflict and cooperation in a natural context. Before comparing the behavior of exploratory and cautious children, therefore, we will summarize the general patterns of peer interaction found in these classrooms.

As already noted, children were in vigorous interaction with each other, making contact with peers much more frequently than with teachers. Most of their contact was with children of the same sex (Table 9). The tendency for girls and boys to cluster in same-sex groups during this developmental stage is a well known phenomenon and, to some extent, teachers may also expect and encourage this kind of grouping. In these classrooms, children spent three-quarters of their time (74%) with children of the same sex, presumably forming such groups spontaneously.

Children contacted their peers with equal frequency for work and social purposes. Work oriented contacts were defined as any discussion among children about work or learning: commenting on each others' activities, discussing ideas, offering suggestions, asking for help or information, following a peer's example or direction and so forth[1]. Social contacts included any interchange that was not work oriented: talking, joking, sharing experiences, expressing affection, teasing and roughhouse, organizing and directing social activities, mediating conflict, complaining or fighting. Some contacts between children included both aspects. That is, children sometimes exchanged work information and teased or expressed affection at the same time. Other contacts were purely social or work oriented. The total number of work and social contacts was almost identical, as indicated on Table 9.[2] To the extent that educators intend to serve both intellectual and social growth through these open structures, the opportunities appear to have been well used.

In separate analysis of work and social contacts with peers, other general patterns appear. Two aspects of work-oriented contact were isolated for special study: children's helpfulness to others, and children's use of peers as learning resources (i.e. giving and seeking help). The examples of the finger weaving and picture dictionary activities, cited earlier to illustrate thinking processes, also illustrate this kind of helping relationship. Children in these classrooms were more apt to help, comment and give work advice to other children than they were to seek such help and advice from their peers. Children offered help or advice about twice as often, on the average, as they sought help (Table 9).

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[1] The definition of work included block building, drawing, doing puzzles etc as well as reading, writing and math.

[2] Work and social contacts were both coded in a given unit of interaction if the contact included both aspects. Therefore, the combined means for work and social contacts would be greater than the total number of child-initiated contacts with other children reported on Table 9. The latter is based on tallies of each interaction unit taken as a whole.

For specific help, as already noted, they turned more often to teachers. It is interesting, however, that there was spontaneous interchange among the children both to give and seek help. In these classrooms there was no concept of "cheating" or illegally helping others, and the children's behavior seemed to indicate the beginnings of a cooperative work ethic in the school context.

The majority of social contacts were positive in content (See Sociable Interchange on Table 9). Children were involved for the most part in social conversation, in expressions of friendship or affection, or in varieties of joking, teasing, and good natured horseplay. "Social distancing" was infrequent. This variable was defined as ignoring or rejecting affection or social direction from peers, or as withdrawing or appeasing others in situations of threat or aggression. Approximately two instances of such behavior per child occurred during the 70 minutes of narrative recording (Table 9).

The pattern of expressed aggression in these classrooms was particularly interesting, in the light of frequent adult concern about uncontrolled aggressive behavior when children are not directly supervised. Adults were always present in these classrooms, but children had easy access to each other, with much opportunity for argument and physical aggression. In fact, however, such behavior was not prevalent. When it occurred, it usually took the form of verbal complaints or threats.

On the average, children expressed aggression in some form 3 to 4 times during the 110 minutes of observation. The range was from 0 to 8, with one exceptional case of 14 instances. Primarily, as noted, aggression was verbal. Verbal aggression was defined as threatening, complaining, or angry yelling. Physical aggression was defined as hitting, pushing, fighting or destroying material. Verbal aggression accounted for two-thirds (66%) of the aggressive-assertive instances. More than half the sample of children (38) showed no physical aggression at all, during the total observation time. A very few children (6) expressed no form of aggression, either verbal or physical.

Though aggression was not prevalent, the atmosphere in these classrooms was not subdued or totally benign. Physical contact, in the form of horseplay, playful wrestling, and so on occurred quite often, especially among the boys, and children teased each other with some frequency. These instances were coded as part of "sociable interchange." "Aggressive interchange" was coded only when the physical contact was not playful and when verbal exchange had a quality of anger or protest. Such instances were observed in all classrooms. There is no suggestion in the data, however, that aggressive behavior among peers occurs often in first grade open settings, either among privileged middle class children or among inner city children.

Differences between exploratory and cautious children appeared in some aspects of peer interaction but not in others. Table 9 reports the means for the different groups.

It had been predicted that exploratory children would more frequently initiate contact with other people than cautious children. This was not borne out with adults and, at the most general level, it was also not borne out in relation to children (Table 9). Exploratory children initiated more overall contact with other children, but the difference was not statistically significant ($F=2.61$; $p < .11$). The data indicate some interesting patterns at a more differentiated level, however. Exploratory children were in more contact with children of the opposite sex, and there were also group differences in the initiation of social contacts. These differences were attributable primarily to the lesser initiative of cautious girls in this kind of exchange.

As noted earlier, children in these classrooms were most frequently in contact with children of their own sex, and the proportion of same sex contacts was high for all subgroups (Table 9). Exploratory children, however, were more apt to contact children of the opposite sex than cautious children were ($F=3.62$; $p < .06$). There were no systematic sex differences in the amount of cross-sex contact, but cautious girls were least apt to work or socialize with children of the opposite sex. In the pattern of their same-sex contacts, cautious children seemed to typify the age level norms more than exploratory children did. Perhaps exploratory tendencies, which are usually defined in terms of object-exploration, verbal curiosity and so forth, extend also to exploration and expansion in the interpersonal realm.

The pattern of peer contacts for learning and social purposes shows group differences only in social areas. There were no differences between exploratory and cautious children, or between boys and girls, in the number of initiated work contacts with other children, and the groups did not differ significantly from each other in the tendency to help other children with their work or to seek help from them (Table 9).

Social contacts were not so evenly distributed among the groups, however. According to narrative data, exploratory children initiated more contact for social purposes ($F = 3.19$; $p < .08$), and were involved in more sociable interchange than cautious children ($F = 4.48$; $p < .05$). On inspection of the means, however, it seems evident that the exploratory-cautious differences were due primarily to the cautious girls. These children were least involved in sociable interchange and initiated less social contact than any other group, including cautious boys. The cautious boys, in fact, were involved in more horseplay and teasing than other children, averaging over 7 instances of such behavior in the total observation time. While playful physical contact and teasing occurred more than twice as often among boys as among girls, it was only cautious girls who were never observed in such interchange. All 9 children with zero scores for this kind of behavior were cautious girls. Cautious girls were also the only group initiating fewer contacts for social purposes than for work issues.

The more restricted social initiative of cautious girls seems consistent with their tendency to stay with their own sex even more than other groups, and suggests a general pattern of social reticence. It is important to note, however, that these children were not isolated. The open context seems to draw children into contact with each other. These reticent girls were in social interaction with their peers, even if not quite so much as others, and even though they may have been more dependent on the initiative of other children to establish the contact.

Social distancing was not associated with either exploratory style or sex (Table 9), but there was some indication in narrative data that exploratory children expressed more anger and aggression than cautious children ($F = 2.83$; $p < .10$). Combined tallies from narrative and precode data, however, suggest that it was the exploratory boys who expressed the most aggression.[1] Of the 18 children with combined totals of 5 or more instances, 8 were exploratory boys. Of the 6 children who expressed no aggression or protest at all, 5 were cautious children and 4 of these were cautious girls.

Differences between exploratory and cautious children could not be attributed to greater physical aggression, since half of the 22 children who expressed their anger physically were in each group. Differences were due primarily to the amount of verbal assertion. The greater assertiveness of exploratory boys in relation to their peers seems consistent with their attitude toward adult direction. In this aspect also, they seemed less apt to acquiesce and more apt to ignore or challenge than other groups. The difference between these exploratory boys and other children, however, was not great, in absolute terms, either in relation to adults or to peers.

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[1] Figures reported on Table 9 for narrative and precode tallies represent modified scores, since the distribution within each set was skewed. The combined narrative and precode tallies reported on the table, however, are based on raw data, since the distribution for the combined tally was satisfactory.

It is of some interest that no overall sex differences were found in aggressive behavior, since such findings are common in the research literature. The data of this study do not contradict the usual findings, however. They suggest, rather, that anger may be expressed particularly by a subset of boys, whose general style of response is assertive and exploratory, and who may express themselves vigorously in constructive forms as well.

In summary: Children were in frequent contact with each other, in these classrooms, both for learning and social purposes. Exploratory and cautious children did not differ in their work-oriented contacts with peers, despite expectations that exploratory children would initiate more contact than cautious children, but the prediction was confirmed with respect to social initiative. Exploratory children were more apt to work and socialize with children of the opposite sex and they initiated and engaged in more sociable interchange with peers. Group differences reflected primarily the reticent functioning of cautious girls. Cautious boys engaged in approximately as much social behavior as exploratory children, particularly in the form of teasing and roughhouse, but cautious girls did not. Cautious girls approached their peers for work purposes as frequently as other children, but were more reticent in initiating social contact, in maintaining social interchange and in socializing with children of the opposite sex.

Suggestive group differences were found concerning assertive-aggressive behavior in the classroom. Such interchange was relatively rare and occurred mostly in verbal form. It occurred more often among exploratory than cautious children, however, and was expressed primarily by exploratory boys.

The even pattern of work contacts found in these data, as compared with group differences in social exchange, may reflect the organizing ethic of the classroom society, which may tend to mobilize children around learning issues, whatever their basic style, leaving social matters more to the basic initiative of the children. Such an ethic may become internalized and account for the spontaneous patterns observed in this study.

SUMMARY AND DISCUSSION

While open education has expanded considerably in recent years, there has been little documentation of children's behavior in open settings and little study of the relationship between children's response styles and their sustained behavior in the classroom. The research reported here has addressed these issues. The study had two major purposes: to investigate possible differences in functioning between exploratory and cautious children in open classrooms, and to describe some general aspects of child behavior in such settings. For purposes of the study, 60 children were observed in their first grade open classrooms. Data analysis was focused on exploratory behavior in the classroom, mastery and learning, self-directed autonomous behavior, and relationships with teachers and peers. The findings of the study will be summarized and discussed below, and some theoretical and educational issues will be indicated.

Exploratory and Cautious Children in the Open Classroom

Previous research has suggested that curiosity and exploratory behavior have some stability as a response style. Some individuals approach new situations, express curiosity and explore objects more vigorously than others. Since open classrooms depend to some extent on the initiative of the child for active implementation of classroom opportunities, the question arises whether exploratory children function differently and perhaps more effectively than cautious children in such settings.

The children selected for study were chosen particularly for the consistency of their response styles on initial testing and evaluation. It seemed theoretically possible, therefore, that the curious-exploratory children among them would behave more autonomously in the classroom; would be more prone to approach new experience, explore objects and express verbal curiosity; would involve themselves in a wider range of available activities; and would interact more with other people, initiating contact with teachers and peers more frequently than cautious children. These and other aspects of behavior, learning and interaction were investigated.

According to the findings of the study, differences between exploratory and cautious children were not so extensive as might be expected and not all predictions were borne out. There was no clear evidence that exploratory children are more obviously effective in open settings, or that cautious children do not use the opportunities of the open classroom for learning and interaction. There were some systematic differences in functioning between exploratory and cautious children, however, and some patterns that characterized particularly the girls or the boys within the exploratory or cautious groups.

Exploratory and Cautious Children: General Findings

Exploratory children differed from cautious children primarily in their social interactions with peers, in the spontaneous expression of work-oriented ideas and feelings, and in some aspects of self-direction and autonomy in the classroom. They initiated more social contact with other children, expressed more curiosity about others, maintained more sociable interchange, were somewhat more prone to express aggression, and were more likely to work and socialize with children of the opposite sex. They also tended to spend more time by themselves, which suggests an interesting combination with their greater social initiative.

Exploratory children also verbalized their experiences and ideas more frequently than cautious children, and more openly expressed feelings of pleasure in their own mastery and in learning. They appeared more generally self-directed in their activities, though not in all aspects, and they were more apt to extend and develop activities on their own initiative.

In general, the two groups differed in expressive behavior, social exploration, and some forms of initiative in the classroom. They did not differ in other aspects of functioning, however. Predicted differences in functioning were in some cases not confirmed and in others only partially so. There was little evidence, for instance, that curiosity and exploratory behavior are consistently expressed through time in the classroom environment. Exploratory children did not approach new experience, explore objects and raise questions in the classroom more than cautious children, though the two groups were originally chosen because of consistent differences in this kind of behavior. To the extent that there were differences between them, they were in the expected direction: exploratory children tended to express more social curiosity, though they did not raise more questions in learning areas, and cautious girls were less apt than others to explore objects. The general pattern of the two groups was not so different as might be expected, however, from the original assessment of the children. There are a number of possible explanations for these findings and the issue will be considered again in the final section.

The prediction concerning the range of children's activities was also not confirmed. Exploratory children did not make wider use of the activities and materials available in the classroom. The prediction concerning autonomous behavior was generally confirmed, as already noted, and exploratory children were particularly likely to extend and elaborate their own activities. However, they were not more persistent, did not select activities or use resources more autonomously than cautious children, and were not more self-directed in implementing the classroom rules and procedures. In this area, there were indications of subgroup differences between cautious boys and girls, and these will be discussed subsequently.

As already noted, there were differences in social behavior between exploratory and cautious children, but general predictions concerning interpersonal contact were not confirmed. Taking into account both work and social contacts with teachers and children, exploratory and cautious children did not differ significantly. Their work contacts with teachers and peers were similar. They were different only in aspects of social interaction.

Sex Differences

Sex differences were found in several areas. Boys engaged in more fantasy and dramatic play, in these classrooms, and expressed simple work ideas more than girls. There is also some suggestion that they expressed more complex thinking as well. Girls were proportionately more involved in symbol system activities than boys but the range of different activities was similar for both sexes.

Verbal curiosity and object exploration showed no significant sex differences, but boys were found to approach new experience more than girls. Autonomy and self-directed behavior were comparable for both sexes. There was some suggestion, however, that boys were more persistent in resuming their work, and that girls were more apt to implement classroom routines on their own.

Boys were involved in more interaction than girls but there were no sex differences in specific aspects of work or social contact among peers, except for roughhouse and teasing, which was more characteristic of boys. There were no general sex differences in aggression. Teachers contacted boys more for general social purposes and control but made no distinction by sex in their more prevalent work contacts with children. Such a finding is in contrast with studies in traditional classrooms, in which teachers are usually found to contact boys more than girls for all purposes (Brophy and Good, 1974).

Exploratory and Cautious Boys and Girls

Some of the general differences that have been described are best understood by examining boys and girls separately within each of the groups. It is clear, from inspecting the data, that some patterns are carried primarily by one subgroup, despite general group differences that are statistically significant. Some of the unique characteristics of each subgroup will be briefly described.

Cautious girls showed a definite pattern of reticence. They were least apt to make social contact with others or to explore relationships by interacting with children of the opposite sex. They were less expressive and lively in the classroom than other children. They were least apt to share their ideas openly, to tease and joke around with other children, or to express positive feelings about their learning and their own accomplishments. On the other hand, they seemed to maintain a responsible, self-directed attitude toward their work -- selecting materials, persisting in their activities, following classroom routines and so on. They were also in as much contact with teachers and peers to help, seek advice and discuss learning matters as other children were. It is interesting that teachers contacted these girls as often as other children to deal with work issues but contacted them less than other children for any other purpose. These children were not isolated and they were not ineffective in the classroom. But there are certain questions: Was their reticence a style which finds its own form of comfortable operation in these classrooms? Does it indicate some underlying insecurity in relation to people? Is the pattern self-defeating by discouraging social feedback, or will these children grow more gregarious in these lively classrooms? Are there ways in which teachers can or should be helpful to these children? To some extent, the answers to such questions may vary for individuals within the group.[1]

Cautious boys presented a different pattern -- in some ways, the reverse of cautious girls. They were clearly sociable and lively in the classroom, spending less time by themselves than other children, but they appeared less autonomous and self-directed in their work than others. Again, the specific meaning of such a pattern is not clear. These children may have been most interested in peer relationships, which is a legitimate developmental frontier at this age, and their general functioning with regard to classroom activities may have been adequate. It is possible, however, that they would need help in confidently directing their own work activities and in achieving an effective balance between autonomous behavior and active contact with other people. Such decisions might depend on the accumulation of evidence, over a period of time, concerning the progress of their learning.

Exploratory boys were characterized by some definite patterns. They appeared lively and expressive, they were in active contact with other people but relatively self-directed, and they seemed less acquiescent than other children in relations with both teachers and peers. These boys openly shared their ideas and feelings, as they worked, and they played with vigor, both in fantasy activities and in social roughhouse with others. They seemed to express anger more than other children and they were more apt to ignore or challenge teacher direction, though the absolute amount of aggression and resistance was minor. There was an underlying tone of initiative, energy and expressiveness in their behavior. Such a pattern seems basically healthy; in individual cases, however, it might raise a problem of control or redirection in the classroom context.

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[1] An analysis of individual children within each subgroup, including observational excerpts, the roster of scores, and an integrated discussion of the child's classroom functioning, is in preparation.

Exploratory girls are the most difficult to describe. They shared with exploratory boys certain characteristics of social initiative, expressiveness and autonomous behavior. They seemed to have the most active pattern of work exchange with teachers, contacting and being contacted somewhat more than others. Aside from this, however, they showed no clearly unique patterns, such as those characterizing the other groups. On the other hand, it may be important to note that these girls did not share the somewhat sex-stereotyped reticence of the cautious group of girls, and that their style of expressiveness would probably not raise issues of control, as the behavior of exploratory boys might occasionally do. It is possible that the functioning of exploratory girls would be particularly well adapted, in its balance, to the open classroom environment.

The findings concerning exploratory and cautious children that emerged from the study were generally not expected. Some predicted differences in functioning did not appear, and major differences that did appear were not specifically predicted. The differences that were found, however, were not incompatible with the differences in exploratory and cautious response styles. According to these findings, the functioning of exploratory children in the classroom reflected a greater tendency to develop activities on their own initiative, to openly share ideas and feelings, and to explore in the realm of social relationships. While the two latter themes were not specifically predicted, they seem consistent with the exploratory attitudes and the open communication of new discoveries that were tested in the original session and that led to the selection of exploratory subjects.

It is interesting that the predictions which were not borne out primarily involved the children's relation to work and learning: the range of their activities, their work-oriented contacts with teachers and peers, the exploration of objects and the expression of intellectual, work-oriented curiosity. Perhaps ecological concepts are helpful in explaining this pattern. Such concepts stress the organizing power of the setting, which tends to call out and reinforce certain behavior from all people in that setting. Presumably the organizing effects would be most potent in relation to the focal aspects of the environment. In these open classrooms, teacher attitudes and classroom structure encouraged children to select and explore activities, express curiosity, direct their activities responsibly and work together. Educators defined the educational task and philosophy primarily in these terms. Social interaction and the open expression of ideas and feelings may have been valued and acceptable but they were not so central to the environmental purpose. Perhaps for this reason, the underlying tendencies of the children accounted for more of their social and expressive behavior and produced differences in functioning, whereas most children were moved in certain directions by the context with regard to learning procedures and work attitudes. In understanding the study findings then, it seems necessary to stress the power of the environment, the nature of the individual, and the interaction between them.

Child Behavior in Open Classroom Settings

The second major purpose of the research was to document the spontaneous behavior of children in open classroom settings. The study was not comparative in design, and there is no systematic framework for evaluating the kind of behavior that appeared. The documentation reported in the findings and the summary presented here, however, reflect the growing interest in describing behavior-in-settings, and may contribute to the growing literature on classroom studies in context (Weinberg and Wood, 1975).

The behavior to be reported was characteristic of a particular aspect of open classroom contexts -- free activity periods, in which children were engaged in a variety of activities, teachers were either working with a small group or moving around the room, and individuals in the setting had easy access to materials and to each other. The generalizations are built from the cumulative observations of a sample of children in those classrooms. Teacher behavior was not specifically followed and was seen, thus, as it crossed the paths of children under observation. In this context, the following behavior can be described:

Work and learning. Children were involved in a range of activities, during free periods. These included both the symbol system skill activities that are the "official" learning frontier of first grade children, and a variety of creative, expressive and manipulative activities. Presumably this pattern expresses the successful implementation of the educational philosophy, which views these varied aspects as important for the child's mastery and development. Fantasy and dramatic play were observed in these classrooms, but to a lesser degree than would be typical of preschool children. As a form of activity, dramatic play seemed differentially important for different children.

There was an active expression of work-related ideas, in the classrooms, appearing mostly as a running commentary among children about the work they were doing. Intellectual, work-oriented questions were also prevalent. More complex thought processes were less frequently expressed, but did appear. They were expressed spontaneously to other children, without teacher prompting, and were relevant to the work children were engaged in at the moment. Such expressed processes included spontaneous categorizing and comparison, explanations of process and function and, to a lesser extent, problem solving and reasoning.

Autonomy. It is particularly difficult to describe the amount of autonomous behavior or to evaluate whether the opportunities were optimally used. The open contexts allowed and encouraged the children to select activities, to take responsibility for pursuing an activity, for finding material, and for seeking help as needed. Children were also expected to implement the classroom routines as they became relevant: to clean up, replace material, get ready for transitions and so forth. Children appeared to take on much more self-direction than would be observable or possible in traditional classrooms. For more exact documentation, however, behavior in these settings would need to be compared with autonomous behavior in more teacher-controlled settings. The patterns of persistence, resumption after interruption, and self-directed shifting to new activities appeared to vary with individuals and would be worth further study.

Interpersonal contact. During these free activity periods, children interacted far more with their peers than with teachers -- a pattern that has been found in other open classroom studies (Travis, 1974). They were in contact primarily with children of their own sex. Their contacts with other children were evenly divided between work-oriented exchange and social interaction. Children discussed their work and gave each other advice and help more than they sought work-oriented help from each other. For such help, they more often turned to teachers. In general, however, they seemed involved in a sharing and cooperative work ethic, with no evidence that they were competing with each other for rewards or that they feared sanctions against helping and discussing the work together.

Social interaction was primarily positive in quality. Children talked, joked, teased and engaged in amiable roughhousing. Compared to positively toned contact, aggressive behavior was rare. Most anger was expressed as verbal protest and there was little explosive or physical aggression. In these patterns, as in many that have been described, there was some variation by subgroup and by individual child.

Children contacted teachers almost exclusively to share or seek help with their work; they made very few contacts for social or managerial purposes. Teachers, in turn, contacted the children primarily in connection with learning. Other studies have also found such patterns of work primacy in teacher contact with children, but they generally find a higher incidence of managerial and control contacts as well (Jackson and Lahaderne, 1971). In this study, of course, teacher behavior was recorded when teachers contacted particular children; they were not followed systematically. If they had been, more contact for management and control might have been observed. It is possible, however, that the pattern and purpose of teacher contacts in these classrooms is actually different than in traditionally organized classrooms, and further study would be of interest.

Classroom differences. Some patterns appeared to vary in the different classrooms. Generalizations are tentative since classrooms were not systematically compared with each other. It appeared, however, that children in School G engaged in much more symbol system activity and asked more work-oriented questions than children in other settings. Fantasy and dramatic play appeared primarily in Follow-Through settings, and children in these classrooms spent less time by themselves than in Schools D and G. It is unclear whether these patterns represent differences in the structure and emphasis of the different classrooms or differences in the characteristics of the children, or both.

The pattern of teacher-child contact also varied in the different settings, and this variation may more clearly reflect the style of the teaching adults. Interaction between teachers and children was most vigorous in School D and more centralized around the teacher than in other settings. Teachers who were observed for two years varied in the amount of contact with the successive groups of children. The patterns of interaction, in each case, suggested the possibility that some teachers in open classrooms may adapt their style of contact to the characteristics of the group, making more contact with groups that initiate less contact on their own, and vice versa. This is an interesting pattern, if so, and worth further study.

Theoretical and Educational Issues

There are certain implications in these data for theoretical and educational issues. They will be briefly discussed in this section.

The consistency of curiosity and exploratory behavior. Investigators interested in curiosity and exploratory behavior have raised the question of stability across time and situations. In their studies they have tended to find some consistency in an individual's behavior but by no means a perfect consistency across modes and situations (Maw and Maw, In Press). In the research presented here, children were chosen for study who showed relative consistency between visual-verbal and motor forms of curiosity, and whose teachers perceived them in these same terms. In spite of this selection criterion, exploratory and cautious children were not consistently different in the expression of curiosity within their classrooms over a period of time.

It is possible, of course, that the classroom measures were not adequate. The data obtained concerning the child's approach or avoidance of new situations seems particularly weak, as discussed earlier. It is more likely, however, that the findings of the study indicate some degree of stability in the response styles, if exploratory behavior is not too narrowly defined, and that the different tendencies of the children are in fact affected by the environmental context, which moves children in certain directions and may serve to reduce the differences seen in laboratory settings. The exploratory children of this study were not more involved in object exploration in the classroom (though exploratory girls were involved in less), but they were directing and elaborating their activities more autonomously. As suggested earlier, this may represent an exploratory attitude toward activities which subsumes but transcends the exploration of objects; the latter are explored, rather, in relation to an ongoing activity. In the same way, the tendency of exploratory children to mix more with children of the opposite sex, express more social curiosity and initiate more social contact may represent a kind of "social exploration" on the developmental frontier of peer relations. If curiosity and exploratory behavior are defined partly in these terms, there was some evidence of consistency in the spontaneous classroom behavior of designated exploratory and cautious children.

At the same time, differences were not so great as might be expected and did not appear in all the expected areas, such as the range of activities engaged in and thus "explored." As has already been suggested, the value system, structure and reinforcement patterns of the environmental context stressed these kinds of exploratory behavior. Cautious children were also in contact with more exploratory peers, whose influence has sometimes been found to enhance the explorations of less exploratory children (Libutti, In progress). The power of the context may thus have reduced group differences and the consistency of behavior in certain ways. Such explanations require further research and testing.

2. "Difference" vs "better and worse" in styles of functioning. The question was raised whether exploratory children might function more effectively in open classrooms, since their response style seemed theoretically better adapted to productive behavior in such settings. The findings do not suggest, however, that they are clearly more effective. Much of the distinguishing behavior is simply different rather than better or worse. If all predictions had been fully confirmed, the evaluation would be different. If exploratory children were more autonomous in all respects; if they selected and engaged in a wider range of activities, explored materials more actively and raised more questions; if they interacted more with teachers and peers for all purposes; then their

functioning would need to be regarded as more effective and productive, and cautious children would seem to be missing the learning and developmental opportunities of these classrooms. Such patterns did not appear in such gross terms, however. Cautious children were not isolated, drifting, or unproductive. There are certain issues for teachers to consider, of course. Expressiveness, social initiative, contact with the opposite sex, and visible pleasure in one's learning are generally positive patterns, and some teacher guidance for cautious children may be advisable. There is no clear evidence, however, that children with different exploratory styles are grossly different in functioning, or that cautious children are in developmental jeopardy in these classrooms.

3. The question of placement. The question is sometimes raised whether different kinds of children should be matched to particular educational environments. Do some children require structure, and thus traditional schoolrooms, while others function well in freer settings? The second point discussed above seems relevant to this question. According to these data, different kinds of children find generally adequate ways of functioning in open classrooms, and may even profit from the mixture of styles among their peers. There seems no general need to sort children into different kinds of educational settings on the basis of their apparent initiative, autonomy, or need for structure. In specific cases, it may be useful to move a child from one environment to another, but the open environment can probably be optimized for most children by astute and skillful teachers, who can help to provide a child with the experiences, amount of structure and support that are required within the open setting.

4. The role of teaching adults. The data of this study suggest some questions and areas of focus for teachers in open settings. It is notable, for instance, that teachers made little contact with children for non-work purposes. These data were obtained in free activity periods, of course, and through observations that were focused on individual children. Social contact may appear more frequently if one follows the teacher through a full day. If the pattern holds, however, the interesting question arises as to whether non-work contacts by teachers are desirable or not. To some extent, low contact may indicate that the room is running smoothly, that the teacher feels no need to control and admonish children, and that she is giving them psychological space for independent behavior and for contact with other children. If the goals of open education include the personal and social development of children as individuals, however, as some educators claim (Biber, 1967; Minuchin et al. 1969; Shapiro and Biber, 1972), personal contact and a teacher-child relationship that includes but transcends the learning tasks may be important.

The data also suggest that teachers may need to pay attention to the particular needs of certain kinds of children. The cautious girls, for instance, seemed reasonably productive and they were not isolated, but their social reticence may require a particular alertness by teachers to the needs of these children, and to the possibility that some may need special attention or specifically arranged contacts with other kinds of children. Teachers seemed to contact cautious girls less than other children, for non work purposes; perhaps they should be noticed and contacted more. In the same way, cautious boys may need help with carrying independent responsibility for their work, in some cases, and in balancing this self-direction with their lively peer interaction.

5. Open classrooms as an educational approach. With the rise and co-existence of different educational approaches the question is often raised, "How well do they work?" The answers have often been sought through testing the children's learning or IQ change. Certainly this study provides no data of that kind. It provides some data, however, on how child functioning in open classrooms matches the expectations and purposes of the educators who have developed such settings. This is another level of evaluation and a relevant issue for many educators. While there is no systematic framework for evaluating the behavior that appeared in these classrooms, the patterns described earlier in this section appear generally consistent with educational intentions. That is, children engaged in a variety of activities, were reasonably self-directed, used the human and material resources of the classroom to facilitate what they were doing, were in active contact with peers for both work and social purposes, and so forth.

Critics, friendly evaluators, teachers and parents are often concerned about certain issues: Will the children learn as well as they do in traditional settings? Will the children be aggressive and difficult to control? Will they spend all their time socializing with each other or drifting about? The study provides no data on the first question or on curriculum and learning issues in general. However, they indicate that children in these classrooms expressed little aggression, particularly in physical form, were usually involved in activities, and were as apt to be sharing work communications with other children as socializing with them. Often the two aspects were combined. Children drifted occasionally, and there was vigorous roughhousing among the boys, but children often stopped on their own initiative and teachers did not seem to find most behavior unmanageable. These questions require further study, with particular attention to teachers' ways of facilitating and controlling behavior. These data do not suggest, however, that children are unproductive in open environments or that the environment is inevitably chaotic.

Frontiers for Further Study

The findings of the study suggest further research in several areas:

Theoretical aspects of curiosity. In this area, it would be important to know whether children who show consistently exploratory or cautious styles on assessment would continue to show strong and consistent differences, after a period of time, in laboratory situations. The children of this study could not be retested at the end of the year, but it would be important to know whether differences persist in laboratory settings, even if they are not consistently expressed in the natural contexts.

The possible effects of an open environment on the consistency of exploratory response styles should also be assessed through comparative research. If exploratory and cautious children do not express curiosity very differently in open classrooms because the environment encourages such behavior in all children, children in traditional classrooms should maintain stylistic differences, on retesting at the end of a year, more than children in open classrooms.

The intensive study of "in vivo" behavior. It would be fruitful to study more intensively the expressed thinking patterns of children, as they work together and communicate their ideas.

Developmental change in the spontaneous expression of complex reasoning would be of particular interest.

Detailed study of spontaneous cooperation in open settings would also be useful, focusing on sequences of cooperative work, the processes of helping and seeking help, and the spontaneous imitation and elaboration of peer ideas and behavior.

A third direction, specifically relevant to open settings, would be a study of how different children create "time alone," in these busy classrooms, and how they balance this with peer interaction.

Teaching issues. There is a general literature and some research base concerning teacher interaction with boys and girls and with different kinds of children. The findings of this study, however, specifically suggest that teachers in open classrooms may be even-handed in work contacts with children but that they may contact certain kinds of children, such as cautious girls, less frequently than others for non-work purposes. This question needs further study.

It is also probable that teacher contact and skill interacts with the response styles of the children, affecting their behavior and the use they can make of classroom opportunities. It would be important, therefore, to do detailed studies of "master teachers" in open settings, documenting their procedures for fostering autonomy, facilitating integrative thinking and problem solving, mediating relationships among peers, and helping children to experience confidence and pleasure in their learning.

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Appendix A

Summary of Procedures for Curiosity and Exploration

Assessment Session[1]

A. Intensive exploration: object-curiosity 3 minutes	E introduces child and observer E leaves child at table with objects O records child behavior for 3 minutes (Prompt at 30")
Transition	E removes objects; places Discovery Board on table facing child.
B. Extensive exploration: Discovery Board	
1. First exploration 4 minutes	
Initial approach 1 minute	E leaves child alone facing board (if no approach in 30", prompt) O records child's initial approach for one minute.
Exploration additional 3 min.	E instructs child to tell about board (Prompt at 30" if no response) O starts tape recorder. O maps and times responses.
2. Recall 2 minutes	E closes board and asks child for recall (Prompt at 30" if no response)
3. Second exploration 4 minutes	E opens board and instructs child to tell about new things. (Prompt at 30" if no response) O maps and times responses.

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[1] Details of instructions and procedures available on request.

Appendix B

Coding Form for Object-Exploration Task

Name
School
Date

Examiner
Observer
Time ____________ Prompt Time ____________

WATCH

TOTAL UNIT	1	2	3	KNOB:	1	2	3	
PICK UP				TURN				
TURN OVER				PUSH/PULL				
FEEL/RUB				OTHER				
TRACE/PNT				CORD:				
OPEN				STRETCH				
ROLL				TIE/TWIST				
JUGGLE				WRAP				
SWING				WEAR				
LISTEN TO				OTHER				
OTHER								

EXTENSIONS:

QUESTIONS:

COMMENTS:

BOX MAGNET

BOX	1	2	3	LID:	1	2	3	
PICK UP				LOOK THRU				
TURN OVER				POKE FINGR				
OPEN/CLOSE				JUGGLE				
LOOK THRU				OTHER				
SHAKE				CLIPS:				
JUGGLE				ATTACH LID				
FEEL/RUB				PUT IN BOX				
OTHER				RE-SHAPE				
				PTRN/CONNCT				
				OTHER				

EXTENSIONS:

QUESTIONS:

COMMENTS:

COMBINATIONS OF WATCH AND MAGNET:

Appendix C

SCORING SYSTEM FOR OBJECT-EXPLORATION TASK

(Stop Watch and Magnet)

Criteria	Points[1]
Spontaneous Approach	1
Span of Involvement	0-1-2
Explores Both Objects	1
Combines Objects	1
Questions (Non-procedural)	1
Comments (Related to observation or exploration of objects)	1
Number of Different Manipulations	
Watch: 0-15 possible manipulations (plus 3 "other")	0-18
Magnet: 0-14 possible manipulations (plus 3 "other")	0-17
Total possible manipulations	0-35
Maximum possible score:	42

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[1] Criteria for point credits available on request.

Appendix D

Schedule of Classroom Observations

	Round I	Round II	Round III	Total per child
First Year Classrooms (D, K, F_1, G_1)				
Narrative Observations per Child:				
Free Activity	two 5 min. two 15 min.	two 15 min.		70 min.
Adult-Child Small Group	two 10 min.			20 min.
Group Discussion		two 5 min.		10 min.
Precode Observations per Child	four 5 min.	four 5 min.		40 min.
Second Year Classrooms (F_2, G_2)				
Narrative Observations per Child:				
Free Activity	two 5 min. two 15 min.	one 5 min. one 10 min. one 15 min	one 10 min. one 15 min.	95 min.
Adult-Child Small Group	one 10 min.		one 10 min.	20 min.
Group Discussion			one 5 min.	5 min.
Precode Observations per Child	four 5 min.	six 5 min.	six 5 min.	80 min.

Appendix E

Categories of Precode Observation System[1]

I. General Context Categories: Material and Activity Context

1. Concrete-operational

   Use of any manipulative aid to learning.

2. Symbol-system

   Child writing or reading or doing math.

3. Creative-expressive-manipulative

   Child uses hands to change physical objects, build, create, produce something.

4. Fantasy, dramatic play

   Child engaged in acting out a fantasy; is involved in dramatic play; may involve special props (dressing-up, etc.) or role taking (child becomes "mother", "teacher", etc.)

5. Motor activity

   Child engaged in gross motor activity.

6. Audio-visual

   Child is looking at or listening to things, with audio-visual aids.

7. Discussion

   Child is involved in discussion with children and/or teaching adults.

8. Multiple activities or change

   Child moving from one activity to another.

9. Other

   Include routine activities such as snack time, dressing to go out, preparation and clean up times, games, etc.

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[1] Only the category definitions are presented here. Examples, coding conventions and procedures for coding are not presented but are available on request. Note also that examples for similar variables are included in Appendices F, G and H, which present the coding schemes for analyzing narrative observations.

II. General Context Categories: Interpersonal Context

1. Child alone
2. Alone with teaching adult
3. With teaching adult and small group (2-5)
4. With teaching adult and larger group (6-12)
5. With teaching adult and total group
6. Twosome: with one other child
7. With small group of peers (3-5)
8. With larger group of peers (6-12)
9. Changing context

III. Nature of Activity, Communication and Learning

A. Curiosity and Exploration

A-1. Approach to new experience

Active approach to new task, activity or event. Shows interest and enthusiasm. Volunteers. Seeks new experience.

A-2. Mobilizes attention

Calls attention to something new or interesting. Notices changes in the room, teachers, other children, general environment.

A-3. Object exploration

Takes material apart to examine it or explore structure or use. Explores new uses or combinations of objects or materials. Incorporates objects or materials into new contexts.

A-4. Expresses curiosity

Asks questions. Suggests finding out about something. Shows clear non-verbal indication of curiosity.

B. Persistence and Resilience

B-1. Completes task

Finishes either designated or self-selected task. Indicates completion either verbally or non-verbally.

B-2. Resumes work

Goes back to an activity after distraction or interruption. Proceeds with activity after a period of difficulty.

III. Nature of Activity, Communication and Learning

B. Persistence and Resilience (cont.)

B-3. Solves problem

Finds solution to a clearly identified problem of procedure or understanding.

C. Feelings of Mastery

C-1. Expresses feelings of mastery

Expresses pleasure in completion of something, or pride in something created or accomplished.

Expresses confidence in ability to do something.

D. Evidence of Cognitive Mastery

D-1. Identifying comment or question

Concrete information, labelling or indicating.

D-2. Recall and communication

Tells or recites a story, joke or riddle. Tells about a TV show or movie. Tells about some personal experience or association.

D-3. Symbol systems

Works on elements, decoding or problems in the symbol systems. Answers factual questions related to mastery of reading, writing, math.

D-4. Plans, instructions, descriptions of process or function

D-5. Classifies, categorizes, compares

Groups things on some orderly basis. Describes categories, identifies group membership of something.

Compares, establishes similarities and differences.

Describes differentiating properties of color, shape, weight, volume, time reference, etc.

Evaluates one object in terms of another.

D-6. Causal reasoning

Draws deductions and implications. Develops causal predictions or hypotheses. Reasons why something might happen. Demonstrates "relationship thinking", connecting one idea to another, or evidence to conclusion.

D-7. Analogy or metaphor

Explains or describes through analogy or metaphor. Describes one thing in terms of another.

D-8. Fantasy and dramatic play

Spins fantasy. Makes up stories. Pretends to be animal, object, another person or character. Dramatizes. Role plays.

E. Initiates Contact for Activity-Oriented Assistance

E-1. Seeks information

Asks questions about the learning material or curriculum.

E-2. Seeks permission for procedure or activity change

Asks permission to move on to a specifically identified next step or activity.

E-3. Seeks guidance in transition or with process

E-4. Seeks help with equipment or materials

Asks how to find things, how to use things, or for assistance in using things.

E-5. Reports confusion

Child is confused but is not able to articulate or specify area of problem.

E-6. Other

Code if child initiates contact with teaching adult which is not clearly codable in any of the more specific E categories.

F. Initiates Contact for Pleasure or Pain

F-1. Affection and sharing

Tells about some experience. Shows something. Shares a joke. Tells a plan. Is affectionate.

F-2. Physical hurt or illness

F-3. Help with routine need

Seeks help with dressing, in relation to food, etc.

F-4. Complaint about peers

Brings a problem or complaint in relation to the behavior of another child or children; asks for help in settling conflict.

F-5. Seeks teacher attention for others

G. Initiates Contact - Miscellaneous

G-1. Asks permission

Asks permission within context of routine classroom behaviors.

G-2. Shows work

Shows work that is finished or in progress.

III. Nature of Activity, Communication and Learning

G. Initiates Contact - Miscellaneous (cont.)

G-3. Volunteers

Offers to participate in something. Offers to perform some classroom job. Offers to help teacher; states willingness to help another child with some task. Can include volunteering when teacher provides the stimulus, unless the child's affect is eager.

G-4. Other

Code if child initiates contact with teaching adult which is not clearly codable in any of the more specific E, F, or G categories.

H. Response to Contact or Suggestion

H-1. Responds to question

Answers adult's questions.

H-2. Responds to suggestion or direction

Either carries out request or challenges that request.[1]

H-3. Responds to request for assistance

Helps another child, assists teacher in response to adult request, or refuses to give help.

H-4. Responds to admonition

Responds to adult's comments about behavior by complying or challenging.

H-5. No response to direct contact

No response to question, suggestion, admonition or request directed by adult toward child.

H-6. Involved in ongoing work discussion

Involved in continuing discussion with teaching adult around work or activity.

H-7. Other

Code whenever child responds to a teaching adult's contact, but when sequence is not clearly codable in any other H category.

IV. Nature of Interpersonal Relationships: Contacts with Other Children

I-J. Initiation of New Contacts

I-J.1. Initiates contact with another child

Calls or approaches. Starts a conversation. Asks a question. Invites another child to join or play.

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[1] Challenge or resistance in H2, H3 or H4 coded with minus sign (eg H2-)

IV. Nature of Interpersonal Relationships: Contacts with Other Children

I-J. Initiation of New Contacts (cont.)

I-J.2. Initiates contact with a group

Asks to join or be included in a group. Enters a new group. Invites other children to join an activity.

K. Work and Activity Oriented Contacts

K-1. Cooperative work and discussion

Working with other children. Participating. Exchange of information. Ongoing interchange.

K-2. Suggests and directs

Suggests how to do something; directs the group, leads.

K-3. Asks questions

Asks questions about the work. Asks for help or clarification.

K-4. Helps another child with work

Answers a question, assists.

K-5. Shares work

Shares a work product. Comments on something in work. Shares ideas, opinions, or reactions to the work. Shows something he or she has done.

K-6. Criticizes

Criticizes another child's work or effort.

L. Social Interchange

L-1. Conversational exchange

Tells stories, jokes, experiences. Discusses current events. Discusses beliefs, plans, fantasies.

L-2. Affection or admiration

L-3. Teasing and banter

Teasing, horseplay, mildly aggressive banter.

L-4. Objections and complaints

Objects to somebody's behavior. Objects to another's treatment of self or other. Complains or challenges.

L-5. Verbal anger or aggression

Child threatens, yells, screams. Clearly indicates strong emotion.

5+. Physical anger or aggression

Child indicates anger by actually hitting, grabbing, kicking, etc. Clearly aggressive behavior. Child destroys something intentionally.

IV. Nature of Interpersonal Relationships: Contacts with Other Children

L. Social Interchange (cont.)

L-6. Mediates conflict
Helps settle a fight or argument. Intervenes. Offers a compromise suggestion.

M. Response to Contact or Suggestion

M-1. Follows suggestion or direction
Does as another child suggests or directs.

M-2. Ignores contact
Pays no attention. Does not respond to a request or contact.

M-3. Rejects contact
Directly refuses to join something. Refuses to help.

V. Self Direction and Autonomous Transition

N. Autonomous Selection of Materials and Activities

N-1. Selects new material or activity
Moves to new activity on own. Selects different material from available supply. May indicate to teaching adult choice of next activity.

N-2. Initiates new aspect of activity
After finishing something, goes on to another stage of activity.

N-3. Suggests new activity
Offers idea to group, teacher or other child for an activity.

O. Autonomous Elaboration of Activity

O-1. Seeks relevant information or material
Seeks supplies or material relevant to ongoing work. Looks up necessary information in sources.

O-2. Observes ongoing activity
Child is a participant observer in some activity, although not physically or verbally active.

P. Autonomous Management

P-1. Orders, cleans and replaces
Replaces material and equipment in assigned places. Cleans up spontaneously. Makes order.

P-2. Follows transition routines
Moves on his or her own through transition routines.

Appendix F. Categories for Analysis of Mastery and Learning[1]
(narrative observations)

I. Nature of Learning Activities

	Examples
a) Concrete-operational	
Use of any manipulative aid to learning	Child using an abacus, counting boards, geo-boards, scale, etc. for math activity. Child using magnet to classify metallic and non-metallic objects.
b) Fantasy, dramatic play	
Acts out a fantasy or role plays	Child uses dress-up material. Child acts out a role ("mother", "teacher", "fire-fighter", "baby"). Children playing cops and robbers in block corner.
c) Motor activity	
Engaged in gross motor activity	Child rides bicycle, jumps rope, etc. Children dancing to music or making motions to a song.
d) Audio-visual	
Looking at or listening to things with visual aids	Child watches a film strip or listens to a record.
e) Symbol system	
Writing, reading or doing math	Child uses a worksheet, does exercises, etc. Child reads book. Child writes own story, works on picture dictionary, etc.
f) Manipulative-creative	
Blocks and building	Child builds roadway and garage. Child plays with tinker toys.

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[1] Definitions and examples are presented below. Coding and rating conventions are not included but are available on request. Variables to be rated rather than coded are annotated under the category name.

I. Nature of Learning Activities (cont.)

g) Creative-expressive	
Drawing, painting, clay, jewelry, sewing, etc.	Child works with wire to make finger ring. Child draws with chalk on board. Child makes animal out of clay. Child paints at easel.
h) Creative-expressive-manipulative: other	
	Child plays in the sandbox. Child plays with water.
i/j) Change and/or transition	
Moving between activities	Child replaces puzzle on shelf, goes to sharpen pencil, gets book and goes to table, etc.
k) Miscellaneous	
Non-codable	Child drifting and observing others.

II. Level of Learning Activities [2]

III. Expression of Feelings about Mastery or Learning

a) Expression of positive feelings and excitement	
Positive feelings about one's own work or efforts; expression of satisfaction, self-appreciation, pleasure in competence	
a1) Verbal	"I'm the best snowflake maker." "I've done three pages already."
a2) Non-verbal	Child finishes working on something, rears back in chair, and claps hands in obvious self-appreciation.

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[2] This variable proved too difficult to code reliably and was dropped from the scheme.

III. Expression of Feelings about Mastery or Learning (cont.)

b) Expression of interest or excitement in some learning material or discovery

b1) Verbal	Child goes to look at cups on window and shouts: "Hey look, the plant is coming up!" Child says, "This is really a neat book I'm reading!"
b2) Non-verbal	Child watches spaghetti coming out of grinder and jumps up and down excitedly.

c) Expression of negative feelings

Self-criticism and negative feeling about one's own work or effort

c1) Verbal	Child looks at picture she is drawing and says: "My picture looks awful!"
c2) Non-verbal	Child makes a disgusted face. Child tears up work with a grimace.

IV. Expression of Curiosity and Exploratory Behavior

a) Responds to new experience or idea

Volunteers; is interested in new events

a1) Verbal	Child shows excitement about playing a new game or trying something out. Child says: "Let me do it!"
a2) Non-verbal	Physically moves toward new object or experience with clear interest.

b) Notices new stimuli or mobilizes attention

Calls attention to something new or interesting

b1) Verbal	Child says: "Hey look at this!" or "Barry has a batman shirt on!" or "It's snowing outside!"

IV. Expression of Curiosity and Exploratory Behavior (cont.)	
b2) Non-verbal	Child taps another child on the shoulder, then points to a girl balancing a ruler on her hand.
c) Explores objects or materials	
Takes material apart to examine it; explores new uses or combinations for an object	Child lifts part of typewriter to look inside. Child turns turtle upside down, inspecting legs and underside. Child tries to write with rock. Child puts paint on truck tires and runs it over paper to make a design.
d) Expresses curiosity	
Asks questions, suggests finding out about something	
d1) Intellectual	Child says: "What's inside the box?" or "If we put dye in the water, will the fish change color?" Child suggests: "Let's mix the blue and red paint and see what happens."
d2) Social	Child says: "Where's the other teacher today?" or "Why are you crying?" Child suggests: "Let's find out when Mary's brother is coming."
V. Expression of Fantasy	
Makes up stories; pretends to be an animal or object; role plays and acts out fantasy. (Rate on 3 point scale)	
VI. Verbalization of Simple Work-Oriented Ideas	
Simple, concrete comments that label, indicate an intention re work, or a passing observation about the work.	Child says: "This part of my painting is a house." Child asks: "What's that?" in reference to something another child is building. Child says: "I'm going to work on my story."

VII. Recall and Communication of Experience

Tells a story, joke or riddle; or talks about a movie or T.V. show; recounts some personal experience or association

(Rate on 3 point scale)

Child says: "In this show, this guy runs and runs and nobody can catch him and then ..."

Child tells about a family trip in the car, when her father had to change a tire and it rained.

VIII. Symbolic Coding or Decoding

Child works on any symbol system activity; reads, writes, works on math problems

(Rate on 3 point scale)

Child takes a book and reads for ten minutes.

Child asks teacher how to spell a word.

Child works with abacus on math problems.

IX. Expression of Complex Thinking Processes

(Rate on 3 point scale)

a) Describes process, function or complex plan

Describes how things work or how something should be done, or what steps are involved in a process

Child says: "When you make jello, you have to heat the water, then you put the jello in a bowl, and then you measure ...." etc.

Child says: "You use this to hold the paper still."

Child says: "You turn two cards over. If they match, you take them both."

Child says: "I'm going to paste these on here after the paint dries and then we can connect those two."

b) Classifies, categorizes or compares

Groups things on some orderly basis. Describes categories or identifies group membership of some thing. Compares; establishes similarities or differences. Describes differentiating properties of color, shape, weight, volume, time reference. Evaluates one object in terms of another.

IX. Expression of Complex Thinking Processes (cont.)

b1) Verbal	Child says: "These two blocks are both square." or "This is much heavier than that one." or "I think that plant is a vegetable."
b2) Non-verbal	Child playing with colored cubes, sorts all the reds in one spot, all the blue in another, etc. Child measures sticks against each other to make an increasing series.

c) Expresses causal reasoning or problem solving

Attempts to explain why something happens; indicates a problem and tries to find a solution; reasons; verbalizes hunch or hypothesis

c1) Verbal	Child says: "I bet if you mix red and yellow you'll get another color." or "If we don't water it, it won't grow, cause it needs water to live."
c2) Non-verbal	Child can't get block to go through space, takes block to shelf and measures others against it until she finds a smaller one, then returns to try it.

d) Verbalizes by analogy, metaphor or word play humor

Describes one thing in terms of another	Child says: "This rope looks like a snake." or "Her hat feels like a kitten."

Appendix G. Categories for Analysis of Self-Direction and Autonomy [1,2]
(narrative observations)

I. Self-Directed Activity with Learning Materials

	Examples
a) The expression of autonomous choice or preference	
The child selects an activity or materials to work on; volunteers to participate in an activity; or changes activity or materials on his/her own.	The child asks the teacher if he or she can work with blocks now. An adult or child asks the child what he/she wants to do and child responds with a choice. Teacher suggests an activity to a group, asking who wants to participate, and child raises hand or calls, "Me!" Child puts book away, then goes to get paper and crayons and begins to draw.
b) Persistence and involvement in activities	
The child continues to work at an activity; rehearses mastery with material; or spontaneously resumes work after interruption	Child continues work with construction materials throughout observation. Child goes to get supplies, then resumes previous activity. Child sorts number cards into piles, collects and sorts again, combines numbers, etc. Child works at math, puts material away, then starts and continues sewing activity for rest of observation.
c) Self-directed elaboration and exploration of activities and materials	
The child explores an object; uses varied materials and procedures; goes through a sequence in a process; or elaborates an activity by combining materials.	The child tries a magnet on various objects. The child uses sticks, crepe paper etc. to elaborate a clay figure. The child begins to tell a story or play out some fantasy with block material he or she has been working with. The child reads, fills in some work sheets about the material, then illustrates it, on his/her own.

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[1] Definitions and examples are presented below. Rating conventions are not included but are available on request.

[2] All variables in the area of autonomy were rated on a 3 point scale.

I. Self-Directed Activity with Learning Materials (cont.)

d) Self-directed use of human or material resources to facilitate an activity

The child goes to get needed supplies; or consults an adult or peer specifically to facilitate some aspect of a self-directed activity.	The child goes to a shelf to get paper or a stapler. The child asks an adult to spell a word or answer a question about ongoing work, then continues with the work. The child asks another child how to arrange the cards in a game he/she is playing.

II. Autonomous Integration of Group Rules and Procedures

a) Autonomous implementation of classroom procedures

The child spontaneously cleans up; makes order; puts away; or gets ready for next activities.	The child sweeps spilled sand into a container, then dumps it in the basket. The child returns paper and books to drawer or cubby, puts pencil in container and scissor on shelf. Child finishes work, goes to cubby and begins to change into sneakers. Child tells another to clean up, or that they'll be going to music next.

b) Autonomous consideration of group principles in resolving issues[3]

The child verbalizes principles of fairness or codes against lying or cheating; considers justification for challenging rules or procedures; or evaluates own needs in terms of classroom or group procedures.	The child says, "It isn't fair to take his blocks for your building." The child says another child can have a second chance because she doesn't know how to play the game yet. The child says she will finish later because it's time for group discussion.

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[3] This behavior was so rarely observed that it was dropped from the scheme.

III. Self-Direction and Autonomy

High:

Child is clearly at the center of his/her own activities. He or she directs these activities and is a self-propelled figure, controlling events. In contact with others, retains this self-direction and may mobilize others towards participation or as resources.

Low:

Child is directed by others; seeks impetus from others, is moved and changed by others' directives. In solitary activities, drifts or is diverted.

Appendix H. Categories for Analysis of Interpersonal Behavior [1]
(narrative observations)

I. Work-Oriented Contacts with Peers

		Examples
a)	Helps or directs others	
a1)	Helps, clarifies, offers necessary material or does work for another	Child helps another solve math problem or supplies spelling word.
a2)	Directs activities	Child assigns roles during fantasy play Tells child to cut out some circles
b)	Evaluates or comments on others' work	
b1)	Positive	"Hey, you got it all right"
b2)	Critical	"You don't know how to draw"
b3)	General descriptive comment	"You're on page 33"
c)	Seeks information, help or material	
c1)	Seeks help or information	"Can you hold this for me while I cut?" -- or requests for spelling help, etc.
c2)	Requests material or supplies	"Can I have the stapler?"
c3)	Takes material from another's possession	Child goes to other side of easel and takes paint jar from another child
d)	Communicates about work	
d1)	Draws attention to work product	"Look at this picture I drew"
d2)	Discusses or shares ideas, plans, or learnings	Child offers ideas during co-operative work, or comments on cognitive aspects of work.
d3)	Expresses feelings or reactions to work	Child indicates pleasure, excitement, disgust, boredom, etc.

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[1] Definitions and examples are presented below. Coding conventions are not included, but are available on request.

I. Work-Oriented Contact with Peers (cont.)

e) Reacts to request for materials, help or information

e1)	Complies	Child hands another crayon as requested
e2)	Denies, ignores or objects	"No, I'm using it" - or pays no attention
e3)	Ignores or refuses direct request for information or help	Child says, "No, I'm too busy" or pays no attention when asked directly for help

f) Reacts to peer direction or example

f1)	Follows suggestion or direction	Other child tells child to use a red crayon and child does so
f2)	Imitates or builds on peer example	Child sees another start washing blackboards; gets a sponge and does the same - or adds raindrops to drawing, as another child has done
f3)	Rejects suggestion	"No, I don't want to do that."
f4)	Ignores suggestion	Child pays no attention

g) Reacts to peer evaluation

g1)	Accepts praise	Acknowledges by smile or says, "Thank you"
g2)	Ignores praise	Child pays no attention
g3)	Rejects praise	Denigrates own work after another praises it
g4)	Accepts criticism	Agrees with criticism or makes changes after another child criticizes work
g5)	Ignores criticism	Child pays no attention
g6)	Defends against criticism	"It is *so* right."

II. Work-Oriented Contacts with Adults

a) Seeks assistance or information

a1)	Seeks specific information or asks whereabouts of materials	Asks how to spell or read something or where tape is
a2)	Seeks guidance, direction or permission; asks to borrow material	"How do I do this page?" "Can I work on the weaving now?"
a3)	Seeks general or non-specific assistance	Child goes to adult to seek help with work, but content of request is not clear

b) Shares or checks work with adults

b1)	Shares product or mastery or cognitive material of interest	"Look at this building I made!"
b2)	Checks in as part of routine	Child takes finished page of work to adult for review
b3)	Spontaneously offers information, help, or material in context of work group	Child with teacher in small reading group and calls out, "I know that one. I can do it."

c) Reacts to adult work contact

c1)	Responds, volunteers, follows suggestions or responds to praise of work	Teacher asks child to answer a question and child does Teacher asks three children at table if they know where the stapler is and child volunteers to get it Teacher suggests child measure wood and child does
c2)	Objects, resists, negotiates in response to adult contact	"I don't know how to do that." "I'll finish it after we come back."
c3)	Ignores contact or suggestion	Child pays no attention

III. Social Contacts with Peers

a) Contacts or shares experience

a1)	Involved in general social contact	Child says "hi" and smiles at another child. Child involved in a social interchange but precise content is inaudible

III. Social Contacts with Peers

a) Contacts or shares experience (cont.)	
a2) Talks, tells jokes, recalls experiences or informs about events or plans	Child at table with others talking about where they went on the weekend Child announces where he's going now, e.g., to wash up Child sings or chants with others
b) Organizes or directs others	
b1) Spontaneously organizes non-work activity	Child tells others to go outside for a ball game
b2) Organizes or directs activities using rules or authority as rationale	"Teacher said I'm in charge. You have to play my way."
c) Teases playfully or engages in horseplay	
c1) Participates in teasing or horseplay	Child makes a rhyme that makes fun of another child. Child scuffles playfully with another.
c2) Retreats or appeases	Child leaves table when others make fun of him (or her)
d) Expresses affection	
d1) Verbal expression	"I really like you."
d2) Non-verbal expression	Child puts arm around another.
e) Expresses complaint or anger	
e1) Threatens, complains, protests, expresses annoyance verbally or non-verbally	"If you don't stop, I'll really get you!" Child makes angry face at another
e2) Hits, fights, throws things at another, or destroys child's work	Child punches another Breaks or destroys another's work or material purposely
f) Mediates conflict	Child explains to another that a third child was really joking and didn't mean to hurt
g) Reacts to affection	
g1) Accepts	Child puts arm around other child who has hugged him

III. Social Contacts with Peers

g) Reacts to affection (cont.)

g2) Ignores	Another child says, "You're my best friend," but child pays no attention
g3) Rejects	Another child puts an arm around child, who shrugs it off and walks away

h) Reacts to threat, aggression or command *

h1) Retreats	Child moves away from area when another threatens to kick him/her
h2) Ignores	Another child tells child to give the chair back or he'll tell an adult, but child pays no attention
h3) Placates or appeases	Child says to threat, "Ok -- stop -- I'll give it back to you."

j) Reacts to direction or suggestion

- j1) Follows
- j2) Ignores
- j3) Rejects

IV. Social Contacts with Adults

a) Shares experience or feelings

a1) Shows affection or talks about self to adult	Child tells teaching aide about family's trip to the beach, or child comments on teacher's clothing
a2) Greets or makes some formal contact	Child says, "Good morning," or "Excuse me."

b) Seeks help or mediation

b1) Seeks comfort, help or permission for self	"I hurt my knee." or "Can I go out now?"

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* If child reacts with annoyance or physical fight, coded III e1 or 2.

IV. Social Contacts with Adults

b) Seeks help or mediation (cont.)

b2) Seeks help or mediation with peer problem	"Henry is bothering me!"
b3) Seeks help, mediation or permission for another	"Janet's crying in the closet."

c) Reacts to affection or support

c1) Accepts	Returns teacher's hug and smiles
c2) Ignores	Teacher praises child's new sweater but child pays no attention
c3) Resists or rejects	Adult tries to comfort child crying from a fall, but child pushes adult away

d) Reacts to admonition or discipline

d1) Accepts	Child quiets down when adult tells her/him to
d2) Ignores	Adult tells child to sit at a different table but child pays no attention
d3) Defends self or challenges	"I wasn't teasing him. He started it."

e) Reacts to direction or suggestion

e1) Follows	Child told by teacher to go out for recess and child does so
e2) Ignores	
e3) Rejects	